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ABSTRACT

The Comprehensive School Mathematics Program (CSMP) is a program of CEMREL, Inc., one of the national educational laboratories, and is funded by the National Institute of Education. Its major purpose is the development of curriculum materials in mathematics for grades K-6. Beginning in September, 1973, CSMP began an extended pilot trial of its Elementary Program. This report describes interviews conducted with 13 first grade teachers at the end of the 1974-75 school year. These teachers all taught first grade CSMP during the previous year; they were the lead group of first grade teachers. Sections in the report include: (1) construction and administration of the interview; (2) background information; (3) changes from last year; (4) new students and low ability students; (5) minicomputers and arrow diagrams; (6) student attitudes; (7) spiral approach; (8) overall evaluation; (9) summary; and (10) appendices of teacher interviews. The teachers, with one exception, liked the program and liked teaching it. Both positive and negative aspects of the program and materials were identified by the teachers. (RH)

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Extended Pilot Trial of the
Comprehensive School Mathematics Program

Evaluation Report 2-C-3
TEACHER INTERVIEWS, FIRST GRADE

Martin Herbert

October, 1975

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Description of Evaluation Report Series

The Comprehensive School Mathematics Program (CSMP) is a program of CEMREL, Inc., one of the national educational laboratories, and is funded by the National Institute of Education. Its major purpose is the development of curriculum materials for grades K-6.

Beginning in September, 1973, CSMP began an extended pilot trial of its Elementary Program. The pilot trial is longitudinal in nature; students who began using CSMP materials in kindergarten or first grade in 1973-74, were able to use them in first and second grades respectively in 1974-75, and will be able to use them in second and third grades in 1975-76. Hence the adjective "extended". The limited scope of these trials does not justify the term "field trial" since the major focus of the evaluation is on a limited number of classes in the metropolitan St. Louis area.

The evaluation of the program in this extended pilot trial is intended to be reasonably comprehensive and to supply information desired by a wide variety of audiences. For that reason the reports in this series are reasonably non-technical and do not attempt to widely explore some of the related research issues. The list of reports from the first two years of the extended pilot trial is given on the next page. The most comprehensive of these are the following:

- 1-A-1: Overview, Design and Instrumentation
- 1-A-3: Final Summary Report, Year 1
- and 2-A-1: Final Summary Report, Year 2

The first of these will be particularly useful to the reader in providing a description of the program, the philosophy and goals of the evaluation and the relationship of individual reports to the evaluation effort as a whole.

Longitudinal Pilot Study of the
Comprehensive School Mathematics Program

Evaluation Report Series

Evaluation Report 1-A-	Overview, Design and Instrumentation
Evaluation Report 1-A-2	External Review of CSMP Materials
Evaluation Report 1-A-3	Final Summary Report Year 1
Evaluation Report 1-B-1	Mid-Year Test Data: CSMP First Grade Content
Evaluation Report 1-B-2	End-of-Year Test Data: CSMP First Grade Content
Evaluation Report 1-B-3	End-of-Year Test Data: Standard First Grade Content
Evaluation Report 1-B-4	End-of-Year Test Data: CSMP Kindergarten Content
Evaluation Report 1-B-5	Test Data on Some General Cognitive Skills Related to CSMP Content
Evaluation Report 1-B-6	Summary Test Data: Detroit Schools
Evaluation Report 1-C-1	Teacher Training Report
Evaluation Report 1-C-2	Observations of CSMP First Grade Classes
Evaluation Report 1-C-3	Mid-Year Data from Teacher Questionnaires
Evaluation Report 1-C-4	End-of-Year Data from Teacher Questionnaires
Evaluation Report 1-C-5	Interviews with CSMP Kindergarten Teachers
Evaluation Report 1-C-6	Analysis of Teacher Logs
Evaluation Report 2-A-1	Final Summary Report Year 2
Evaluation Report 2-B-1	Second Grade Test Data
Evaluation Report 2-B-2	Readministration of First Grade Test Items
Evaluation Report 2-B-3	Student Interviews
Evaluation Report 2-C-1	Teacher Questionnaire Data
Evaluation Report 2-C-2	Teacher Interviews, Second Grade
Evaluation Report 2-C-3	Teacher Interviews, First Grade

Key to Indexing

1-C-2 Observations of CSMP First Grade Classes

↑↑↑ "2" refers simply to the number within a given year and type of data

↑ "C" refers to the type of data being reported
 A: Overview, summary and theoretical reports
 B: Student outcomes
 C: Non-test data

↑ "1" refers to the year of the Pilot Study according to the following:

	Kindergarten	First Grade	Second Grade	Third Grade
Year 1 (1973-74)				
Year 2 (1974-75)				
Year 3 (1975-76)				

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Introduction

In the fall of 1973, the Comprehensive School Mathematics Program (CSMP) began a longitudinal pilot study of its Elementary School Program. Over 100 teachers began using the program, either in first grade or kindergarten. During the 1974-75 school year, the second year of this pilot study, most of these classes continued into second grade and first grade respectively and many new classes began using CSMP materials.

For the purposes of the pilot study, classes in the St. Louis area are designated "local". For these classes teacher training is standardized and comparison classes established. These local classes provide much of the evaluation data derived from the pilot study including data related to classroom observations, student and teacher interviews and individualized testing. Classes not in the St. Louis area are designated "outer ring". These classes provide information concerning usage of materials (via questionnaires and teacher logs) and various corroborative test data from cooperating sites.

This report describes the interviews conducted with 13 local first grade teachers at the end of the school year. These teachers all taught first grade CSMP during the previous year, 1973-74; they were the lead group of first grade teachers. Thus this was their second year in teaching the first grade CSMP curriculum.

Construction and Administration of the Interview

The thirteen teachers interviewed were those local teachers who had just completed their second year teaching the CSMP first grade program. Presumably any "novelty effect" would have worn off and teachers would be confident enough of their knowledge of the program to have adapted it in whatever way they wanted.

The purpose of the interview was to probe teacher opinion concerning the first grade CSMP program in an informal yet reasonably structured manner. This series of interviews supplemented other information from teacher logs and questionnaires given to not merely local first grade teachers but all first grade teachers using CSMP materials.

The interview was based on a series of questions relating to various aspects of the program. These questions are given below. The complete set of questions was not necessarily asked of each teacher; in some cases the teacher's response to a previous question provided the desired information and in other cases the interviewer (the author conducted all the interviews) simply missed the question. Nor were the questions necessarily asked in the order given below. Occasionally a teacher raised new issues which were pursued in follow-up questions.

1. Background Information

- a. How many students are in your class? Do you teach math once a day or twice a day? For how many minutes altogether? Is that about the usual time you would spend on math if you were teaching another program?
- b. Has the second grade teacher said anything to you about your students from last year?

2. Changes from Last Year

- a. How did this year go for you and your class compared to last year?
- b. How does the ability level of your class compare to last year? Did you get further in the sequence this year? What lesson are you on now?
- c. Was your preparation time reduced this year? How about compared with your previous math textbook?
- d. Did you omit any lessons this year? Did you use any supplementary materials such as worksheets? Homemade or commercial?
- e. Did you use the workbooks more for checking this year? Do you think there is a need for testing materials for student evaluation?
- f. Did you manage the materials any differently?
- g. Did you find that your students who had CSMP last year in kindergarten were in any way better prepared for this year?

3. New Students and Low Ability Students

- a. How did you handle the problem of new students entering midway through the year? Did this turn out to be fairly successful?
- b. How did you handle the slower students? Were you satisfied with their progress compared to what they would have accomplished in a regular program? Do you think this program adequately meets their needs?

4. Minicomputer and Arrow Diagrams

- a. Could you describe for me the progress your kids have made on the Minicomputer this year? Do you like using the Minicomputer in teaching math?
- b. Were your students able to do the arrow diagrams in the workbooks alright? Do they understand the idea of arrows?

5. Student Attitudes

Generally what were your students' attitudes toward CSMP? Is this different from first graders' usual attitude toward math?

6. Spiral Approach

What do you think of the spiral approach now? Did you find it frustrating the first year?

7. Overall Evaluation

What's your overall evaluation of CSMP now that you have taught it for two years? What are its best and worst aspects?

The interviews required from 20 to 30 minutes and were usually conducted at lunch or recess or after school when the children were not present. All the interviews were tape recorded and transcripts of the recordings are given in the Appendix. In the chapters which follow summaries have been made of responses to the topics listed above. This summarization proved to be a rather difficult task because of the open-endedness of the questions and the extent of some of the responses. While the summaries provide a good description of the opinion of these 13 teachers the reader is urged to read at least a few of these interviews from start to finish. Even the best summaries tend to compress and blur the various shades of opinion given in response to almost every question.

Background Information

- a) "How many students are in your class? Do you teach math once a day or twice a day? For how many minutes altogether? Is that about the usual time you would spend on math if you were teaching another program?"
- b) "Has the second grade teacher said anything to you about your students from last year?"

a) Because of the objective nature of the questions in the first section it has been possible to summarize the responses in tabular form. Table 1 summarizes responses to the questions regarding numbers of students and time teaching math.

Table 1 .

Summary of Responses Background Information

Teacher Number*	Number of Students	Math Class Once or Twice Per Day	Total Number of Minutes for Math Per Day	More, Same or Less Than Usual Time Spent on Math
1	22	1	30	S
2	35	2	50	S
3	21	1	40	M
4	23	2	60	S
5	19	1	40-45	M
6	16	2	55	M
7	30	1	40-45	M
8	26	2	60-75	M
9**	Mean=28	1	40	S
10	24	1	60	S
11	22	1	60-75	M
12	27	1	30	S
13	23	2	45	S
Across Teachers	Mean=24.3	8 once/day 5 twice/day	Mean=51 minutes Median=45 minutes	7 Same 6 More

*The numbers refer to the teacher interview numbers as they appear in the Appendix.

**More than one math class.

The number of students per class seems fairly normal and covers a range from 16 to 35. Five teachers teach math twice a day, a procedure endorsed by CSMP since the lessons are often intended to require 15 to 20 minutes. The number of minutes per day is rather long; it can be seen that almost half the teachers spend more time teaching math with CSMP than they would in another math program.

b) The other question in this section dealt with second grade teachers' comments about students from last year. Five teachers said they had not heard anything, the question was not applicable to two others and the comments the other six received were generally complementary. Their responses are given below. The numbers in parenthesis after the responses refer to the number of the interview as it appears in the Appendix. These responses, and those given in the other sections, are edited responses, often compressed from several statements which were sometimes given at different times in the interview.

Yes. The teacher next door, Ms. _____, told me that most of the students that had the math in first grade did very well. And they picked up on the Minicomputer right off the bat. There were a few that still didn't let's say "catch on." But I'd say maybe only two out of the whole lot. (#6)

Yes she has been very complementary. At the beginning of the year she was just amazed at what they could do. Apparently the few - of course who had the problems - still do. (#7)

No. _____ is teaching CSMP downstairs and her only concern is with the slow kids. We talked about that a little bit. And she asked me if I found that they had trouble. (#8)

They say the students are very well prepared for second grade and they do better work than second graders usually do. (#9)

The feedback is kind of sketchy. Apparently there haven't been any great problems without consulting the manual and so forth. (#10)

Well, yes. _____ said that they were doing very well. A lot of them got tired of using their Minicomputer which is understandable. She's getting pretty far into the lessons now where it's getting difficult for some of them as far as number facts and things. In fact I think they scored very well on the standardized test, the math part. More than I guess problem section and reading problems. She said they didn't have enough practice in that, in word problems. (#13)

Changes from Last Year

- a) "How did this year go for you and your class compared to last year?"
- b) "How does the ability level of your class compare to last year? Did you get further in the sequence this year? What lesson are you on now?"
- c) "Was your preparation time reduced this year? How about compared with your previous math textbook?"
- d) "Did you omit any lessons this year? Did you use any supplementary materials such as worksheets? Homemade or commercial?"
- e) "Did you use the workbooks more for checking this year? Do you think there is a need for testing materials for student evaluation?"
- f) "Did you manage the materials any differently?"
- g) "Did you find that your students who had CSMF last year in kindergarten were in any way better prepared for this year?"

a) Rather long responses were given to the first question "How did this year go for you and your class compared to last year?" Nine teachers thought it went better ("smoother" and "more comfortable" were frequently used phrases) and two teachers (#3, #12) thought it went worse. One teacher (#13) did not attend to questions as intended and one teacher (#2) had a mixed reaction. Some of the attitudes were shaped by circumstances not related to the program (changes in the classroom setting, different students, assistance provided, etc.).

Last year I think it was a little bit more of a struggle, everything being new to me and to the kids, a completely new event. This year it wasn't so hard for me as a teacher. Some of the problems I was more or less expecting because I'd been through them once before. (#1)

It's more or less the same as I used to have. Now there are some days I'm not going to have any math in the afternoon so I have it all in the morning. (#2)

Not as well. First of all _____ was always available and came over frequently and could really help me out. And last year I had a student teacher and two boys who came over every day and graded all workbooks. That gave me time to work individually with the students or with small groups. This year I really was bogged down with it. (#3)

It went better. Things were more hectic as I had first and second grade. But we did go faster despite the fact that I had three math lessons a day. (#4)

I found with my group this year that I had to review more and to explain more, but this has been true in each subject this year. I think it's been a more relaxed atmosphere this year. I think on some of the lessons I condensed more and still realized the same goals. (#5)

Better. Much better. I didn't have to read the lessons as intensively as I did before. I would glance over it - I could remember a lot of things from last year. (#6)

Well of course I had a good year's overview of what we had to do and I was more relaxed. Bookkeeping and organization were more of a problem but there was no problem this year whatsoever. (#7)

Much better. I feel more comfortable with it. Last year when they didn't get something I'd feel like I had to stay there and go over it. But I found if I just keep going they do pick it up. (#8)

The program went smoother this year and the kids had CSMP in kindergarten last year. But we had too many students and not enough teachers and the low ability group was much slower than last year. (#9)

Much, much easier. Basically last year we had to teach to the middle of the group (teacher helped team-teach two combined classes last year). This year it's much more precise in the fact that you've got all of an ability group together. I didn't run into the difficulties this year as I did last year in the fact that last year we had such a wide range of ability grouping. It also helps a great deal that I am familiar with the materials. (#10)

It went much smoother. Because of course we'd been through it once before. (#11)

Not as well. My class is kind of game-oriented because I do a lot of learning games with them. And for some reason a lot of the CSMP materials seem like another game and to them. Anything classified as a game automatically becomes unimportant. They don't feel the importance of paying attention or learning the rules or whatever. And even though I stress that we'd be using the Minicomputer all year and stress important concepts, about a third of the class at least just didn't seem to see the value in learning it. (#12)

b) and c) The response for the questions in b) and c) are summarized in Table 2, below.

Table 2
Comparisons with Last Year

Teacher Number	Compared to Last Year: Higher, Lower or Same			Preparation Time Compared to pre-CSMP
	Ability Level of Class*	Number of Lessons Covered	Preparation Time	
1	Not asked	L	L	Not asked
2	S	S	L (slightly)	S
3	L	L	H	H
4	S	H	L	S or L
5	L	S	L (slightly)	Not asked
6	H	H	L	S
7	L	H	L (slightly)	H
8	S	H	L	Not asked
9	S and L	S and L	L	S
10	H	S	L	S
11	L	S	L	S
12	L	L	L (slightly)	S
13	L	L	L	S

*Sometimes specifically asked, sometimes inferred from other responses.

As a group, the teachers judged the ability levels of their classes as about the same as last year and got about as far in the curriculum. Table 2 probably reflects more variation than there actually was; most of the responses were qualified ("a little lower in ability", "a bit lower", "a few more lessons", etc.). However, in the case of preparation time compared to last year the responses, except where indicated, were much more emphatic ("Yes a lot less", "Quite a bit less", etc.). Thus the table accurately portrays the reaction of teachers that their preparation time was much reduced from last year, and judging from the right-hand column, generally reached the level of preparation which these teachers were used to in teaching math.

d) Seven of the teachers said that they did not omit any lessons from the sequence. Two teachers (#3, #7) omitted some lessons on probability, two teachers (#9, #12) omitted some lessons near the end in order to complete the recommended 240 lessons. One teacher (#1) omitted some of the easier lessons (games, for example) and one teacher (#6) omitted some of the harder lessons on return arrows.

Five of the teachers said they did not use non-CSMP materials to supplement the program. The responses of the other seven teachers is given below (one teacher was not asked).

Yes. I did. Some of them were my own and some of them were commercial. Things like the clocks, inches and common measures. (#2)

Yes - quite a bit. More so this year than last year because I knew the children were not going to continue in CEMREL. I used both commercial worksheets and some I had prepared myself. (#3)

I used a few worksheets on my own. They were just math facts in general. (#6)

Sometimes I give the slower students extra worksheets and make things for them. I'd make a master of something that we've had. No commercial worksheets whatsoever. (#7)

Time; we did some measurement with inches and feet which they need for next year. I extended the basic fact drill and they would every once in a while just do a worksheet to see how many more facts they could do. (#11)

A few ditto masters commercially made but mostly my own. I worked on addition and subtraction practice, also money, a little more on place value, measurement, number sequence, counting by 2's 5's, 10's. (#12)

Number facts worksheets. Number facts 1 to 12 maybe. Commercial worksheets because we are going back to a traditional program and I thought that if that program expected them to know their number facts fairly well and quickly then I would give them that kind of practice. (#13)

At least two of the teachers who indicated they used supplementary materials stated directly that the reason for this was that their students would not be in CSMP next year in second grade. This may partially (though not completely) explain the frequent use of supplementary worksheets by teacher 12. Thus these teachers as a group appeared to be implementing the program without significant alteration; few lessons were omitted and the use of non-CSMP material was usually moderate.

e) In response to the question regarding any different or more frequent use of workbooks this year, virtually all the teachers said they were using them in the same way, perhaps checking more or fewer pages than last year. The question concerning possible need for testing materials for student evaluation was included because several first grade teachers suggested it last year.* Eight of the thirteen teachers thought that the workbooks provided sufficient information for the teacher. The other five responses are given below; it can be seen that, though they thought such an addition to the program might be useful, they did not feel very strongly about it.

The testing material I wouldn't mind having occasionally, but the workbooks really let you know a lot real quick - if they are falling down on arrows, or if they are falling down on Minicomputer. A periodic test, maybe a test every 50 lessons or something over those basic skills, wouldn't be too bad. But you can tell where they are falling down. (#1)

I think it would have been helpful. If nothing else just reassuring on what my own evaluations were because they were all through observation of the student. And I don't think it hurts to have a check from time to time just to see it on paper - either to verify what you already know or to find out, "Whoops I really missed on that student. (#3)

Sometimes I think it would help and sometimes I don't. I think that sometimes it would be nice to know just what they do know over and above what the workbook has. Not so much a formalized test but perhaps a special workbook after 100 lessons or something like that. (#11)

Well the workbooks could be used. However, if you use them as tests then you can't really use them as a learning factor. So it wouldn't hurt to have a test. (#12)

That might be good. After the different concepts like maybe the idea of halves and thirds, that type of thing, subtraction, and taking one-half on the Minicomputer. (#13)

f) Teachers were asked whether or not they managed the rather large amount of materials any differently. Seven teachers said they were better organized ("stored a little differently", "extra file"), but three of these seven noted that management of materials was still somewhat of a problem. Four teachers said they did not change things much and implied that they did not find the problem to be serious.

g) The final question in this section dealt with teachers' perceptions of the effects of their first graders having had CSMP kindergarten the previous year:

"Did you find that your students who had CSMP last year in kindergarten were in any way better prepared for this year?"

This question was only applicable to five teachers whose class had CSMP in kindergarten the previous year. These five teachers seemed to feel that, at least in some ways, the students were better prepared for CSMP. The responses are given below; note the disagreement between teachers 2 and 3.

I think in some areas they were. I would say for F-blocks, and the A-blocks, the cuisenaire rods. Not in arrow diagrams. (#2)

No I didn't notice any difference except with arrow diagrams. (#3)

Of my class this year I had only probably 60-65% who had been in the kindergarten program and for the most part were the top students. So I feel that I really couldn't make that comparison. (#7)

I think especially with the average to above average. They knew about the computer and a few of them knew the value when they came in here just from having it in there. Ant like when we started out doing string diagrams they'd say "We did that last year" or "We did that with Mrs. _____." So yes. (#8)

Oh yes - they didn't need as much explanation for many of the topics. (#9)

New Students and Low Ability Students

- a) "How did you handle the problem of new students entering midway through the year? Did this turn out to be fairly successful?"
- b) "How did you handle the slower students? Were you satisfied with their progress compared to what they would have accomplished in a regular program? Do you think this program adequately meets their needs?"

a) The most popular method of dealing with the problem of new students entering midway through the year seemed to be some form of peer tutoring. Of the twelve responses (one teacher did not have any transfers), nine included peer tutoring. Two of these teachers (#10, #11) appeared to do this in concert with a fair amount of individual teacher assistance and another (#5) also placed new students with her slow group. One teacher (#9) found that peer tutoring didn't work and relied entirely on individual help but the other eight teachers who tried peer tutoring seemed to think it was reasonably successful. Two teachers (#1, #7) just worked new students in with the rest of the class. And finally one teacher (#2) had many new students transferring in throughout the year causing serious difficulties and made up two groups of new students which she worked with twice a week.

Generally teachers seemed to feel they were able to cope with this problem adequately though this depended on the ability level of the students (with low ability students there were real problems), on how late in the year the student entered (the later the worse, obviously) and on how many new students there were (one sympathizes with the problem of teacher #2 - a difficult situation with a traditional program but especially frustrating for her with CSMP).

If I think a child is able to handle it I'll let him in. If I don't think he is he'll go in the other first grade class. I'd rather them be with the whole group rather than individually or with another student. If they are singled out they sometimes say, "I don't know if I want to do this," but if they are with a group to start with they just kind of work and mingle right in with the group. (#1)

Twice a week I would take them in small groups - nine of them in a group though it depends on the group. And I would work just with them and we would go back and we would start with the Minicomputers and arrows and introduce them to the language of the program and then we would work together on the board and on paper. (#2); see the transcript in the Appendix for further comments regarding new students.

I had a couple and one just went to it beautifully and the other one did not at all. They entered about the middle of the year so you could catch them up on the spirals or with the arrows. That didn't seem to disturb either child. It's usually the Minicomputer obviously. Within a couple days they already seem to establish one fairly good friend - hopefully it's someone

who understands it quite well and can help them with it. The other one just resented it and turned off - would not do it. And I finally had to eliminate any Minicomputer pages in the workbooks with him. I ought to add at this time this child had some other problems. It was not a typical student. (#3)

I just paired them up with my brightest - I had the second grade students in my class this year - the brightest second graders. It worked out fairly well. I also sent flashcards home and explained to parents why they needed to know these. I had no time to sit down with them myself. Other than with the Minicomputer and the arrow diagrams I think all the other different concepts were brought up enough times - repeated with the spiral. The kids pick that up. The Minicomputer you needed to be in from the ground floor. (#4)

I only had one who came in late. I helped him with all the concepts we've had. I also have a little group who need some special work on that area anyway. I also have tried some peer tutoring this year. (#5)

I didn't have any. (#6)

Well I had several come in up to October 1. That was no problem. I did review. I would ask the student before the class "Have you ever seen the Minicomputer before?" "No." - "Well let's teach him, let's just show him." Then I would let children come up and explain things. I also did that with a child in December. I thought it was a very good review for the child. But he was very, very low. He was not succeeding in math and when I gave them individual tests he began to catch on. He is gone now. He probably would have been retained in my classroom. (#7)

I haven't had a lot of new students entering. I usually put one of my top people to help them. And I have an eighth grader that comes twice a week for an hour and so I put her on. I haven't had anybody come in late. Now last year I did. And I felt like there was a problem but I think that was more on my part. I'm much more at ease with it. (#8)

Many of the students who arrive at the middle of the year have done a lot of transferring and are slower students. I tried to spend time individually with them after school or at recess or in class when I could. I have them sit at the front so I can watch how well they do. I have them work with other students but this way didn't work out as well as last year. (#9)

Relatively easily. If I assign a worksheet to the entire class, after an explanation then I'll go and sit beside that one or if I have a very fast student I'll say don't tell them the answer but if they get stuck help them with the process, and this is especially true with the Minicomputer. (#10)

Usually I just let them work with somebody else or I'd sit down with them. It worked out well. My children are not very independent when it comes to just sitting all by themselves and working with the Minicomputer but if there are two of them they can catch their mistakes especially with the Minicomputer. (#11)

Usually what we would do is assign student tutors. I promised the tutors a reward if their pupil reached a certain goal. And I also helped them - I didn't go back to the beginning workbooks. I didn't do that - I could have. (#12)

I had one come in before Christmas so I didn't have too big a problem. She had a problem. She had a problem with the Minicomputer at first. But then the better students helped her with that and did it with her. I think peer tutoring worked. I don't have enough time to answer all the questions or do all the problems with them. It seems to help. (#13)

b) The first part of this section concerned any special methods teachers used for dealing with slower students. The most common method was to group together students who were having difficulties and work with that group. This occurred while the other students were working on activities which did not require frequent help from the teacher such as workbooks or reading assignments. Five teachers had time scheduled for this and five others did it on a more or less irregular basis. One teacher used peer tutoring, one relied on individual assistance and one combined these two methods. Several who grouped students together supplemented this with peer tutoring or regular individual assistance. All in all the responses seem to be fairly typical of the things teachers do in math or any other subject with students who have difficulties. The responses are given below.

Well the slower ones I try to work with individually and as a group. I've got six or seven I know are falling on the same thing when we get together. The other kids are either doing a workbook or something else. If the others are working on reading and I've got these kids working in the math then I know that they are doing something without having to come back and forth to me. But it can get kind of frustrating when they're not getting it. (#1)

A free day was used for my slow students. It's surprising, as much as we counted, the number line is still not that good. Some of them don't even know the numbers. (#2)

As I said I didn't work with them as much as I did last year. I really couldn't stretch myself thin enough to get to them and work with them. I did work in smaller groups, but oh at a very small percentage of what I did last year. That's understandable if you have a student teacher in and you can either have a big group or small group. (#3)

I have no other special time set for math other than the workbooks. With the slow kids I always check their math books first. I only group them together during a lesson where I felt the kids needed it, for example on the Minicomputer pages. Sometimes I would let the brighter students have worksheets and work by themselves and I'd go through the worksheets with the kids who I knew couldn't do it themselves. I would do the lesson with them or let them work by themselves or give them help as they went along. They had no extra time of the day where I squeezed it in. (#4)

I work a lot with a group of students on a daily basis and we have the workbooks. I have the children go back over them and a lot of the problem this year seemed to be that some children just did not understand the Minicomputer. A lot of times I'd have them put it on the floor wherever I was with a group and I could watch while I was doing something else. (#5)

Well when we had the free days usually I would take the slower students in a small group. Many times I'd have the faster students working on workbooks and take the small group and go over some of the things like the Minicomputer, multiplication - other things I could tell they just didn't get. And then many times I'd use some of the other students in the class to help the slower students. It worked out nicely. They really liked the tutor system anyway. (#6)

Sometimes I take a group of them back to the back chalkboard and we will do a similar arrow diagram, or something similar while the rest of the class goes on. And then peer teaching is very strong in here to the low ones. I give the slower students extra worksheets and make things for them. (#7)

I usually pull them aside. A lot of times when it's a lesson my aide will walk around with the kids who are getting it and I'll pull those little slow ones out and we'll work together. Or when they're doing reading it's another chance for me to pull and we'll just work on something that we've worked on in the last week that they seem to be having trouble with. (#8)

Very often I had to do things with them rather than let them do it. They don't work very well on their own. (#9)

I only had one or two that didn't catch on as quickly as others. I would start them on a worksheet and say "If you have a question come over and ask me while everybody else is working." Then I would spend those 10-15 minutes with those children. (#10)

I'd pair them within the group on a great deal of things. They're paired with children that are more just average. A lot of times they would work the sheets together. Sometimes I'd use the time after we had accomplished a lesson either independently or we'd do workbooks together and here again that's where I'd get in a lot of their skills. (#11)

The slower students couldn't get past the second workbook of any of the series. When they completed the first two workbooks I just made up practice sheets for them to do. No I didn't take the slow kids together. I worked with them more individually. (#12)

Myself. I have just three that will do their workbooks together. When we do the lessons they can do them at the board. But they don't work well independently on workbooks. (#13)

The last question in this section was whether the program adequately meets the needs of the low ability students; did they make as much progress as they would have in a traditional program. Two teachers (#8, #9) thought that the low ability students got more out of CSMP than out of a traditional program. Four teachers (#3, #6, #12, #13) thought that these students would be better off in a traditional program, though one (#3) qualified her response, basing it on the fact that her students would not be using CSMP next year. The other teachers indicated that they were satisfied with the progress of low ability students vis-a-vis a traditional program. This is not to say they were satisfied per se, merely that the problems were no worse with CSMP.

It's tough in a traditional program too. Slower students just have to keep going over and over and over whereas the more alert children have the ability and are able to digest more. It's a little different because, well with strings, we never called them strings before but they called them sets, put them in circles. But the arrows - that's a problem. They can do a simple one. Then I'll turn around and give them an independent one and some of them will do one number right but the others they won't do. (#2)

I think the slow students would be better off in a traditional program. Particularly now. I always have to speak with the understanding that I know they are not going on to CEMREL second grade. Those children just need reinforcement on ones and tens concept and just addition and subtraction facts so that they can go into Addison-Wesley. I think the slower ones need much more of that kind of work so that they can proceed as far as they can in second grade. I'd have a different outlook if I knew CSMP was going on. (#3)

I think they made just as much progress. The thing that I liked about this program - I really liked the Minicomputer. I do believe that people make mental images. And I really was tuned in to the fact that this program was first and foremost to help people develop logical thinking skills. Math is a tool. And I think this program gives kids mental images to keep in their minds. Slow kids that are having difficulty grasping these kinds of physical concepts need something concrete. Sometimes they need to hear it a bunch of times and the spiral method repeats a bunch of times. (#4)

I think for most students that it meets the needs. I think probably with any program you are not going to reach each child. I think our problems are less because I don't think the child feels a frustration of maybe not getting as much as some of the other children, whereas in a traditional program I think the children become labeled sooner so to speak. (#5)

I was satisfied at the end. Before I felt like I'm just going over the heads of these kids and they're just not getting it. But now in the last month I have noticed progress of the slower students. And I can tell that they have caught on to many things. I think for just the basic math facts they may get more out of a traditional math program than they would from CSMP. I'm just guessing. (#6)

Oh yes I was satisfied. I feel especially in the first quarter we need more worksheets with a little slower pacing and basic computations, adding and take away. Or even simpler arrow drawings - I think we need a little bit more geared to them. (#7)

I think it meets the need better because at least the workbooks are geared to them but I'm sure that really they don't get all the things that they should. I just feel like they're not completely lost. And even as a fourth grade teacher there was always that little group that, no matter what you introduced, just really couldn't do anything. I feel in first grade they're really not expected to master everything. (#8)

They wouldn't have succeeded in any program. It's such a slow group. Our average class contains some students that we would normally think of as in the slow group. I worry about these slow students but all in all I think they're getting more than they would have in a normal program. (#9)

Yes I think they know just as much as they'd know in a regular program. (#11)

No I don't. I think a lot of the CSMP - the way it's presented, the arrow diagrams and the different Minicomputer functions kind of threw them. They had problems catching on because some of the slower students had a hard time with abstractions. They need everything in concrete terms. And when it came to using arrows they just couldn't get it figured out. I think they would have been better in a more traditional kind of program. (#12)

I had to implement things into it. I think the worst aspect is that there is not enough practice at the beginning of the year for children to associate numerals and numbers with concrete objects - to know that "6" is related to a pile of 6 blocks. I think that the Minicomputer and arrow diagrams might be too abstract for the slower students. I'm not quite sold on it for slow students. (#13)

Minicomputer and Arrow Diagrams

- a) "Could you describe for me the progress your kids have made on the Minicomputer this year? Do you like using the Minicomputer in teaching math?"
- b) "Were your students able to do the arrow diagrams in the workbooks alright? Do they understand the idea of arrows?"

Eleven teachers said they liked the Minicomputer, one (#3) de-emphasized it during the year because her students would not have CSMP next year and one teacher (#12) did not like the Minicomputer, and questioned the extreme amount of time spent on it instead of on traditional drill type activities. About half of the teachers cited problems that low ability students had with it: "I always had them do the real simple parts of it" (#13), "Some can't place 6, or 7, or 9 on it" (#9), "There are some who can't maneuver" (#5), "Invariably I'd find somebody reversing the numbers" (#1), "By themselves, independently; no" (#2). But even with these provisos, teachers seem to feel that students were getting something worthwhile out of the Minicomputer. The responses to this particular question were rather long and difficult to summarize.

I think it's good. I think it should be throughout the whole grade school. I figure that in first grade they are not going to master it but they are going to get the basic skills and again in second grade it should get better. It should continuously get better every year. One problem I was having was trying to explain to them about place value. If I put up a two-digit number sometimes they would want to put them all on one board. Invariably I'd find somebody doing that or reversing the numbers. The backward plays are hard but the forward ones they can get. (#1)

Those that have mastered it I would say fantastic progress. They can make plays and calculate and things like that. The slow students have learned the number names for the colors - that's all. And they can make simple plays, you know. And they can show you 1, 2, 4, and 8, and maybe 10. And as long as you're working with them - yes. But by themselves, independently - no. I like the Minicomputer, I enjoy it. And I think the children enjoy it and get something out of it whether they can do it or not. (#2)

Well last year if you'd said it I would have said very much so. This year I did not do that much work with it. I knew they weren't going to have it next year so I de-emphasized it to a point. The kids can do forward and backward plays and calculations and subtraction and with negative numbers and all of that. I didn't get as far this year. (#3)

They can do the adding and subtracting, and times to varying degrees. There were some who were pretty good at subtracting and making the backwards plays. There were others of course who needed to do it with you, others who will do it if you help them set it up. But I think they work pretty good with the plays. I think the Minicomputer is neat - I really do. (#4)

I like it because I think they are surprised at the large sums that they can do. I still think that it's a good device for the slower students too. There are some who can't maneuver but they are getting something out of it. (#5)

Well they can make forward plays, backward plays. They can do addition, subtraction, multiplication, including fractions-multiplication of fractions. The slower students have picked up on it. Before it was just completely over the their heads. But now I can notice some real improvements. I like the Minicomputer. I think it gives the kids a better concept of numbers. I guess numbers seem more concrete. (#6)

As far as place value I think it's a wonderful means to teach place value as we have it in our system. They can add very adequately in the hundreds - most of them. They can multiply - they love to do that. And then in subtraction I have put more emphasis than I did last year because we're further along. I feel that they are better able to subtract and I'm stressing the reasons - the regrouping concept. They love it. And I like using it. (#7)

I really like it. I think it's very good. I really do. It's worthwhile for slow children too because they can at least add and subtract. They still have a little trouble with putting an X up and then they'll forget it's an X. I think they can do things that they otherwise wouldn't be able to do. (#8)

With the slower group, even at the middle of the year, it was like something completely new. Some can't place 6 or 7 or 9 on the Minicomputer. The faster students love it and can really do it. I like using the Minicomputer. (#9)

I'm really amazed. I'm really pleased with their thinking and how involved it gets and how well they can work with the Minicomputer to decide how to do many of the things. (#10)

I don't think my children know the Minicomputer well at all if they have to sit all by themselves with no help whatsoever. They follow it when we do it at the board and they do it very well in groups but here again they catch each other's mistakes. My kids for some reason make a lot of just random errors. And if it's straight adding they'll be pretty good at that but any of the others - the backward plays or subtracting or negative numbers, they get all confused. I like using it. I think it teaches a lot of little things and I had a lot of fun doing it. (#11)

I question the extreme amount of time spent on learning to use the Minicomputer when perhaps they should be doing more traditional drill-type activities. Using the Minicomputer may have given them an understanding of how the process works - you know how addition works and all that but I don't think it really prepared them for actually doing a paper and pencil activity and using their heads. (#12)

I like it. The slow kids like it and I always had them do the real simple parts of it. Otherwise they get too frustrated. And there's one boy that can't remember yet what values the different squares have. But he tries. You know they want to do it. They like to do it. (#13)

b) This section asked about students' abilities to deal with arrow diagrams. This question generated considerably shorter responses than the question about the Minicomputer. There was general agreement that most students liked the arrow diagrams and were able to work successfully with them, but five teachers noted that low ability students had considerable difficulty with them, particularly when doing them on their own.

They got the understanding but occasionally they got mixed up. If they were doing +3, +2, +3, +2 somewhere they might get mixed up and put the wrong number there. It was even difficult when I was trying to break it down to show them actually writing out the number sentence. Some kids could use the arrow correctly but had difficulty when they had to actually formalize it into a sentence. (#1)

As a whole - I'd say 60% could do them independently. (#2)

The arrows they do very well. I'm just amazed. (#3)

I think arrow diagrams are very hard. Perhaps I didn't do a very good job of teaching them, but I found that a lot of the kids couldn't work them by themselves. It took too much time and patience for them to get the colors out and make those. They were sloppy about drawing their arrows. I think it would be nice if they could come from kindergarten with CSMP background because it's a lot to give them. They understood them in the lessons. But in the individual books just the brighter students got those. (#4)

I think that they have done quite well on arrow diagrams. The $\frac{1}{4}$ and $\frac{1}{3}$ and $\frac{1}{5}$ has been a little beyond them. They can get $\frac{1}{2}$ - most of them get $\frac{1}{2}$ rather thoroughly. (#5)

A few of them had problems with arrow diagrams so when I got to the return arrows - no way. So I did skip a couple of the lessons like that. (#6)

Oh, yes that was understood and they accepted it. They liked it. (#7)

Yes. I think they get the idea. It's like with everything, they really don't have a lot of trouble with it when we're together but when they go to putting on their paper what they've got is right. It's just that it's not what I asked them to do. They'll change an arrow or not copy off the board right. And there is that little slow group that probably will always have trouble especially when they go to their own. (#8)

They loved them. They seem to do very well with arrow diagrams. (#10)

Yes they like those. They get confused a lot of times by them: you know they come up and ask, "Now which way do I go to follow the arrow?" But I think they understand it fairly well. (#11)

They love the arrow drawings. I would tack those up on the walls for weeks. They do them fairly well not except for the slower ones - it's too much of an abstraction for them. When you give them four arrows, let's say within a snake kind of thing and they have to find the different values, they just don't take enough time to do it. They can do it. Maybe overwhelming I suppose. (#13)

Student Attitudes

"Generally what were your students' attitudes toward CSMP? Is this different from first graders' usual attitude toward math?"

The responses were very positive regarding student attitudes towards CSMP. All teachers said the students liked CSMP and only one (#12) qualified that statement, saying that towards the end of the year students seemed to get tired of it. In about half the interviews statements were made directly comparing student attitudes in CSMP and in traditional programs. In all of these, with the same qualification (#12), teachers said that their students preferred CSMP. The two most common reasons given were the variety of lessons and materials and consequent lack of boredom from doing the same thing for two weeks, and the workbooks.

I've always felt that they like CEMREL better. (#1)

Wholesome. Very. They enjoy it. Compared to previous math programs - it depends. You had some fun lessons with our previous math program. But I think it was a bit better. (#2)

They liked it - they did. Much more so than math that I taught in first grade before. (#3)

I think they liked it equally well as last year's class. They seemed to be more enthusiastic. This year's class liked math. They did. And they couldn't wait to do the workbooks. Towards the last days of school they kept saying "When are we going to do the workbooks?" (#4)

I think they like it. They like it. The children as a whole look forward to math maybe a little more because I think under the traditional math as I taught it you had some who wanted to go to the rest room and some had developed a headache, and you don't have this kind of thing anymore. So there's something there that they like. They love the workbooks. (#5)

The C-rods first of all, the workbooks, the marble shaker races, the tangrams. They liked the Minicomputer but they had gotten to the point in which they did not want to use it solving the problems. The best part of the program is the enthusiasm of the kids. (#6)

As last year they got excited when it was time for math and most of them were very attentive. They responded to the stories, to the posters, and they accepted the fact that math is exciting by these visual aids we had and by the type of stories. They build up a concept that this is fun. (#7)

My better students really like the workbooks. They really like the program. I really feel like they like most things. I'm trying to think of something that we do that they really don't like. (#8)

I think they like it. They don't get bored the way they did in the old program when they'd spend two weeks on the same thing. (#9)

The kids seem to like it. I was trying to think of something that they really dislike and I really can't think of anything that the whole mass of them has a general dislike for - you know one or two don't like to do this or don't like to do that. Right now there are some who have outgrown the Minicomputer. (#10)

They don't like the Minicomputer. I don't know why. They just would rather not. And they like the games-the marble shakers, and they like the guess-my-number and where they tell you the number and then you give them another number to figure out what you did. They like those kinds of things. Most of them really enjoy doing the workbooks. And they like the arrow diagrams. (#11)

Until about the last third of the year I'd say the attitude was better than it would have been in a traditional math program. They looked forward to it. But towards the end of the year we were having problems anyway with the materials. They seemed really tired of it. When I'd put an arrow diagram on the board they'd groan, "Oh, not this again." When we'd get the Minicomputer out they wanted to do it but they didn't want to listen to how the functions work. They just wanted to get in there and do it which kind of made a problem. (#12)

I think they're more excited about this one. I didn't particularly enjoy the program we had. They enjoy I think the difference in lessons. (#13)

Spiral Approach

"What do you think of the spiral approach now? Did you find it frustrating the first year?"

In the spiral approach used in CSMP, topics are continually reintroduced, for brief periods (perhaps even one-half of a lesson), throughout the year. Instead of spending perhaps two weeks in developing a particular skill at the end of which time a certain mastery or level of performance might be expected of students, the same skill might be introduced in a lesson, developed further in another lesson a week later and so on during the course of the year with succeeding lessons dealing with progressively more sophisticated or difficult areas of that skill.

All of the eleven teachers who responded to this question seemed to like the spiral approach. The responses were generally fairly moderate with occasional qualifications (#2, #4, #7, #12). Seven of the teachers indicated they felt more comfortable with the spiral approach this year than they did last year.

It works. Sometimes I think that it teaches them to pick it up faster. I found it a bit frustrating the first year but then when I realized that they were going over the same kind of materials and then when I noticed some of the things in the second grade room - it's actually some of the first grade, going over it again. (#1)

I liked it. It works out fairly well if time is long enough - yes. (#2)

I like the spiral approach. I think there is a point where you have to have mastery. That's the only thing. I don't know what you expect the kids to have mastered by the 10th week of school or the 5th week or what. (#4)

I like it. I think probably many of us encountered problems and frustrations that we haven't felt this year. I think when you come back to a topic a second and third time that more kids do learn. (#5)

I found the spiral approach frustrating the first year, the fact that it wasn't mastery. The slower students this time got it more so than the students last year. (#6)

I am a teacher that wants to feel that everyone has gained, has learned and I know that will never be in any class. I work towards that goal. I don't know how other teachers do but I do follow-up and review and maybe I stay with the lesson longer than say 10 or 15 minutes, but at the end of that time I'm not at ease to move on and I think well - the next time. It wasn't terribly frustrating. I'm more relaxed this year about the spiral than I was last year. I have had to adjust my own thinking along that line. (#7)

I like it now. It was frustrating the first year but by about the middle of the year I found things were working out O.K. (#9)

Very well. It was frustrating the first year in the fact that I didn't know when the spiral would come around again and how deeply I needed to get and how comprehensive my teaching needed to be and when do you stop and say, "We'll come back" or what my expectations should be. But this year, I haven't found that to be a problem. (#10)

Yes this year I just went ahead whether they understood it or not. We just moved on because I knew we were going to come back to it. Yes I think it worked out fairly well especially with the low kids because after about 10-15 minutes their attention was on another topic anyway. (#11)

I think it's pretty effective. In some of the concepts where you are learning to use a minicomputer and you are learning to use the arrow diagram I gave more practice on it than the material called for because I felt that if they didn't at least get a small handle on it at first then the next time it was presented it would be just adding confusion onto confusion. (#12)

I had my doubts last year because they didn't get this at all - "What should I do?" And you'd maybe emphasize it. So I just sort of let it go this year. It seems to have worked. I think most of my students have a good understanding of math. (#13)

Overall Evaluation

The responses to this question have been separated below into Best Aspects and Worst Aspects. Many different responses were given for both questions. Most frequently mentioned favorably was that students liked the program (#1, #3, #5, #6, #7, #8, #12, #13). Most frequently mentioned unfavorably were problems with low ability students (#1, #2, #3, #6, #8, #13) though this was occasionally qualified in some way.

Best Aspects

It beats the regular drill. The strengths of it are that you have more material to work with, its variations. Every day it's not the same thing. It's new and it's different, the kids like it, and it's an approach where the children are using game-type things and even the lessons are slow enough to show what you are supposed to do step-by-step. (#1)

The best aspect is that you had so many built-in things that they had. (#2)

I've enjoyed teaching it and I know that the children have been much more enthusiastic about math which is my love anyway. (#3)

The best things about it are arrow diagrams - those are very good. I think the Minicomputer is good. I think the Venn Diagrams, I would have liked to have done more lessons with those had I had time. (#4)

As far as the skills we're developing and the goals we're reaching in the program - I myself am happy with it because I think the children are reaching the goals in a more relaxed situation than they were in the traditional program. I'm still very happy with the program myself. It does take time but I think the children are enthusiastic about it. (#5)

I guess the best part would be the enthusiasm of the kids and seeing the kids do things in math that most people didn't consider first graders doing - multiplying for instance and subtracting two and three-digit numbers. (#6)

I think it gives the children such a good relationship between numbers and that they are not isolated. I think whoever compiled it really took into account some other concepts besides number because they have intertwined many of the readiness skills. I think it's exciting because they do see how numbers relate in the arrow diagrams. I really feel they are further advanced even in computing the basic processes than in a traditional book. And it is exciting for them and I think it gets them to think logically. I'm just as excited this year as last year. (#7)

I really like it. I don't see them turned off at all. That's what I guess I like best. That they seem to like math. (#8)

I like it. The students do well and I'm quite pleased. (#9)

I like it very much. I have been very, very pleased. And I feel that the children have progressed more this year. (#10)

I like the idea of the stories and the way most of the skills are taught because I really think they understand them. That's probably one of the biggest things I like - the teaching techniques in it. (#11)

The best thing about it is the high student interest level. It still is a lot higher than your traditional "Turn to page 36 and do these problems." And since I went back to the traditional math program I really get that a lot. They just don't want to do it. (#12)

I'm more comfortable with CSMP than I would be with a traditional one because I've taught CSMP for two years and a traditional program only one year. I like the way CSMP teaches kids to think about the kind of problem they're doing. I think it gives them a better understanding of place value and I like the manipulatives and the way they keep the kids' attention. (#13)

Worst Aspects

I would say the worst would probably be that I would want more remedial work if you've got a group of kids who need more work at a slower pace. (#1)

The worst aspect is that so much is required. The children are required to remember so much. It's all right if they have the ability but if they don't it's just too much for them. (#2)

It's a little overwhelming in the amount of grading that I had to do and trying to keep up with it this year without any assistance whatsoever. The weakness is the slower student I think. But I think they enjoy it, but I really believe the slower students ought to concentrate on addition and subtraction facts and very much more general work. And I'm speaking about the very slow students. (#3)

I think for me the hardest thing is packaging all those materials. I don't think it had any weak points. (#4)

I really don't have a real criticism of the program. I would like marble shakers to be a little more substantial. That's my main criticism. (#5)

I guess the worst part to me would be just that frustration level that I reach, in which the slower students bother me. And I know that you would have slower students in any program. But I think in CSMP I feel it more so than if I were teaching traditional math. (#6)

There's not enough time to teach what all you give us. Really. Probably the worst would be not having at my fingertips a little more material for the slow. More time in our days, it's not your problem. (#7)

From my point of view the grading would be more than in a normal program because they are doing different things at different times. I guess I'd still like to see a way to meet that little low group. I don't know if that means maybe slowing down. (#8)

There is one big problem. The materials aren't packaged very well. I have a lot of unused worksheets, especially those after lesson 250, just piling up. (#9)

Probably one of the disadvantages we have found is parental concern. They don't seem to understand that a new program is valid just because it's not printed up in a book, and we've had some concern that children aren't getting "traditional math" - "Well they don't have a math book that they are working out of." (#10)

Probably the hardest thing for me would be to determine just which workbook series to put them in. To determine just exactly what their ability level is in the program is probably the hardest and the thing that I don't know. (#11)

The bulk of the materials, having all these boxes of materials, has been a problem. It didn't seem to me that they got the skills that they should have in their basic addition and subtraction facts. I don't think they made the transfer from the arrow diagrams and the arrow snakes over to addition and subtraction. (#12)

I think that the Minicomputer and arrow diagrams might be too abstract for the slower students. I'm not quite sold on it for slow students. (#13)

Summary

The responses for each set of questions have already been summarized and the full transcripts of all interviews are given in the Appendix. The summary that follows below is the author's own version of the salient points.

1. Five teachers (#3, #10, #11, #12, #13) will not be teaching CSMP next year. This may have caused them to respond or to teach the program in a different way than would be the case if they knew their students would be continuing into second grade in CSMP.

2. There was generally what might be called a "return to normality". Teachers were neither wildly enthusiastic nor extremely negative in their appraisals of various aspects of the program. They seemed to have roughly the same number of students (fairly typical class sizes), with approximately the same ability level and covered about the same number of lessons. The program went more smoothly for teachers, there seemed to be fewer problems in managing the materials (or else teachers got used to existing problems) and the amount of preparation was reduced to what teachers would normally spend. Teachers adapted the program in various ways; in dealing with low ability students, in omitting certain lessons, in supplementing with non-CSMP worksheets, in working with new students and in repeating or lengthening the instruction time for certain lessons. All these things indicate that the teachers were getting used to the program and had indeed incorporated it into their teaching so that CSMP was no longer "the new math program" but was becoming, in a sense, just plain "math".

It is worth noting, however, that many teachers were still spending more time in teaching CSMP than they would have spent with their previous math program. Whether this is good or bad is problematical. Some teachers indicated the program was rich with many varied things to do and they and their students enjoyed math time; thus it was desirable to spend more time. Others noted that there were so many lessons which required extra time and review, that in order to complete a reasonable portion of the curriculum it was necessary for them to spend longer each day.

3. Without doubt the teachers, with one exception (#12) liked the program and liked teaching it. Many of the responses, both positive and negative, were somewhat tempered and every teacher pointed out some facets of the program they disliked. Clearly these teachers with two year's experience with CSMP did not usually see the program as superlative in every way, but just as clearly they did like it.

4. The most positive aspect of CSMP was the enthusiasm that students had for the program. This was attributed to the wide variety of lessons and materials and to the fact that students did not have to spend long periods of time on the same topic or skill development.

5. The questions which drew the longest responses and the most disagreement were those regarding the appropriateness of the program for low ability students and the value of the Minicomputer as a teaching device. These two questions were strongly related of course, since there was fairly strong agreement that for average, and especially high ability students,

the program as a whole and the Minicomputer in particular were very effective and the teachers themselves liked the Minicomputer. The students learned more and were presented with a greater challenge than would normally be the case. But teachers did not agree on the efficacy of the program for low ability students. Some thought the Minicomputer and arrow diagrams too abstract, particularly near the beginning of the year when students did not have a fully developed concept of numbers and all the teachers indicated that these students did not get as much out of the program as they would have liked. Many noted that these students could not work on their own with many activities. One may take it that these teachers feel that CSMP does not adequately meet the needs of low ability students. However, in the view of most, neither do other math programs. Teachers were divided on whether or not these children would be better off in a traditional program; it seemed to be a difficult decision either way. Similarly, whether or not these students got enough out of the Minicomputer to justify the time and effort was a difficult decision. Typically teachers seemed to feel that kids liked it, that slow children had many difficulties with it but that they got something worthwhile out of it.

Here are two views of CSMP and the Minicomputer for low ability students.

I think they made just as much progress. The thing that I liked about this program - I really liked the Minicomputer. I do believe that people make mental images. And I really was tuned in to the fact that this program was first and foremost to help people develop logical thinking skills. Math is a tool. And I think this program gives kids mental images to keep in their minds. Slow kids that are having difficulty grasping these kinds of physical concepts need something concrete. Sometimes they need to hear it a bunch of times and the spiral method repeats a bunch of times. (#4)

No I don't. I think a lot of the CSMP - the way it's presented, the arrow diagrams and the different Minicomputer functions kind of threw them. They had problems catching on because some of the slower students had a hard time with abstractions. They need everything in concrete terms. And when it came to using arrows they just couldn't get it figured out. I think they would have been better in a more traditional kind of program. (#12)

6. The reader might wish to read certain interviews which highlighted certain issues or raised new ones. For example:

- a) The need for a screening test at the beginning of the year to identify students ill prepared to begin CSMP (#1)
- b) The difficulties in dealing with large numbers of students who transfer into the class during the school year without the CSMP background and language. (#2)
- c) The difficulty in teaching CSMP without assistance after a year of frequent help from aides, senior students, etc. (#3)
- d) A description of the basic thinking skills enhanced by CSMP (#4)
- e) A well articulated criticism of various aspects of the program (#12, the only interview that was on the whole negative towards CSMP).

Appendix

Transcripts of Teacher Interviews

Interview 1

- I: Let me first ask you how many students you have. There are two first grades. How many students are in each class?
- T: I have 22 and I don't know how many she has - she might have about 19 or 20.
- I: Do you have the better ones?
- T: No. We have both mixtures. I have some that are retentions from last year and some that aren't. And so we decided instead of more or less having her kids penalized and not having CEMREL we took part of hers and part of mine. And I think that gave some of them incentive. Because they say "why can't we all do it?" I think it works better when you have a group that really tries, instead of some who say "well I know I'm going to be in here so I can lay back."
- I: How did this year go for you and your class compared to last year?
- T: Last year I think it was a little bit more of a struggle. It was new and with it being new, everything being new to me and then to the kids, it was I guess you would say a completely new event. This year it wasn't so hard for me as a teacher. As far as for the kids - some of the problems came up again, but I was more or less expecting it because I'd been through it once before. It wasn't as though I was kind of feeling down or anything.
- I: Did you get further in the sequence this year than last year?
- T: No this year what happened is, we had a lot of people interrupting last year, but this year I think it was even worse. And we had MIT this year and we didn't have it last year. That's a math improvement test. They didn't have it last year. This has been instituted this whole year. So that means more kids going there to get some help and I guess it helps. It's like RIT which is remedial instruction for the children who are kind of slow in reading. They have a teacher at the school for that. They are selected by their Iowa Basic Skills tests from kindergarten and then they have a cut-off point and she tries to select as many as she can handle. If she has more from my class and she can't take them all she'll just have to take the number she is allowed. Maybe 7 or 8. And she works a half hour with them each day. She doesn't have all kids that are in this program. Some are and some aren't. She can generally tell the ones that are in the program. And with the ones that she knows aren't in the program, she's pulling her hair.
- I: Did you omit any lessons this year?
- T: Oh, yes. When you said omit then I knew there were a few that I could omit. Some of the games I omitted. I wanted to try to stress some of the skills so I omitted some of the games and then conferences took over and we had inclement weather and things like that.
- I: Any other kinds of activities that you skipped?
- T: The easier ones I think the, picked up - the arrow games where they had to follow something. That was kind of easy. I wanted to use that time for something else. We try to get to the workbooks but sometimes that was kind of hard. And then I'd go over the workbooks again. The workbooks really help you to get to know where they are falling down.

Interview 1 (continued)

- I: Did you use them more this year than last year for checking purposes?
- T: I did that because I could find the weaknesses of each child. And even after going over it and giving them the workbook again sometimes they still would do the same thing. But after you talk to them one-to-one, they get it and I don't know what's going on. Sometimes they depend on you too much and they know if they don't get it you're going to still go over it with them.
- I: Do you think there is a need for testing materials for student evaluations or do the workbooks really do enough for you?
- T: The testing material I wouldn't mind having occasionally, but the workbooks really let you know a lot real quick - if they are falling down on arrows, of if they are falling down on minicomputer. A periodic test, maybe a test every 50 lessons or something over those basic skills, wouldn't be too bad. But you can tell where they are falling down.
- I: Did you use any supplementary materials? Worksheets that you had made up yourself that were different?
- T: We used a lot of things that we had for MIT. She would come down and work with the whole group as a class. With word synthesis they would pick out so many blocks and things like that. So all of it more or less helped and combined but you still had the group of kids who, for some reason or other, just did not catch on. But this isn't in math only. I have one child who's IQ is very low but I didn't even consider that. I knew he had a problem before I even noticed his testing rate. I mean when you can't even write your name or form letters or Then I talked with the parents and found out that he had had polio and a few other things and they are waiting for you to help him. And this is it - he's eight now. He wasn't placed in school right away. His brother is on time but he's not and they are right together. Five means nothing to him and he writes his name in reverse order; it's backwards and it's in reverse order. And then when you try and work with him one-to-one he'll get it. But if you say "Go write your name," it's backwards, you can count on it, or a letter missing. So with his IQ as low as it is he isn't qualified to go into some of the other programs where you know he needs to go. And that's something that you know you're just not ready for. I think that there should be some more remedial work taught with it.
- I: What kind of remedial work?
- T: Like the workbooks and the R's - that's good remedial work. I would say that's for the slower kids. I would put the A workbooks as the first books for the regular kids.
- I: Could the R workbooks be made any simpler than that? Do they understand what to do when they see the problem?
- T: I think it's simple enough - that's real easy. They basically get that. Now I've had problems with the kids understanding less than and more than with the arrows that you have to draw. Now when you have them in groups and they can see it and then when they go back sometimes they put the arrows pointing the wrong way and then sometimes they just draw lines and it just drives you crazy. And that's what bothers me.

Interview 1 (continued)

I: Was your preparation time reduced this year compared to last year?

T: Well I knew it. All I had to do was glance at it to get the idea. I didn't have to go word for word. Last year I was more or less feeling in the dark. If you see something you know what it is and even if the kids stumble somewhere you pick it up and can get at the problem. You find yourself more or less not going word for word but if the children get it then you put up another lesson. You don't have to go by the examples.

I: Did you manage the materials any differently than you did before? Storing them and getting them out?

T: Basically the same. Some of the materials we weren't able to use as I wanted to because I was more or less just trying to get through the workbooks and get the skills and let the children get the hang of it. And then I think a lot of times when we were going back over it we just slowed up a little bit to try and pick it up. Some days I just said "Stop - we're not getting it. Put it down - because you're getting frustrated." They're waiting for you to do something but some days it just doesn't get going.

I: How do you handle that problem with slower students?

T: Well the slower ones I try to work with individually and as a group. I've got 6 or 7 I know are falling on the same thing when we get together.

I: The other kids are doing a workbook?

T: That or either doing something else because sometimes when I'm working with the math I'd rather just be working with the whole group instead of splitting them up because they'll still come to me with that workbook. If the others are working on reading and I've got these kids working in the math then I know that they are doing something without having to come back and forth to me. But it can get kind of frustrating when they're not getting it. I tell you, instead of me hollering and getting upset I'll say "Stop - just put it down we're not getting it today." And they'll look real strange but I'd rather do that than get upset. Like I said some days it's good and some days it isn't.

I: Do you teach math once a day or twice a day?

T: I try to get it in about once a day. The reason is I have about 5 reading groups. I've had to split it. I had one group that I had to split in half, another group that was split, and a third group I had to split - it's about 5 or 6. And instead of holding that one group because 4 aren't getting it I've split them in half because if I have three or four here that are really moving and 2 or 3 hanging back, it would be unfair to keep pushing and they're not getting it. So what I do is I just let them go and that's what's taking most of my time.

I: How many minutes a day does the math period last usually?

T: If I can get in a half hour I'm doing great. Sometimes it goes over that if it's going good. If it's going good we keep going; if it's not going good, well it's limited.

I: Is that about the usual time you would spend on math if you were teaching another program?

Interview 1 (continued)

- T: Right. It would have to be that. Basically we're trying to stress the reading because there are so many things you have to cover and then you're fighting against different kids in the group. Because I don't want to hold a group of kids back because you've got about 4 or 5 not getting it. So I just let them go. And I can give those children who are fast the work and they can go do it while you are taking time with the slower ones and they don't feel so rejected. Now the slow ones might feel rejected but they know why - they know they can't get it. And then you are able to keep check on those and go on with the other kids who are getting it. And you are not penalizing.
- I: Has the second grade teacher said anything to you about your students from last year?
- T: No. I have told her that I have one or two that were pretty bright in one thing - the two I had before - and she said they're still doing pretty good. They're still going and I'm glad of that. And I said I might have two just like the last two. But I think it's kind of like a break-up always each year. You're going to have 2 or 3 that are just going to pick it up and they are going to continue because they like it. But I must say the ones that don't get it don't like it.
- I: What is the attitude of the students towards CSMP?
- T: They don't mind doing it. The ones that are puzzled are the ones that don't come every day or the ones who miss something.
- I: Do you have a high absentee rate?
- T: Well I'd say half days - you know. They don't come all day. If you want to call that a high absentee rate you can look at it like that. You've got some that come occasionally, some in the morning, some in the afternoon. And they miss out. If they miss their reading in the morning then they miss that and they pick up something else, so Mom feels "Well they've come a half a day, that's alright."
- I: How many kids do you have absent from math class? About 2 or 3 everyday?
- T: It might be about 4 - off and on 4 - I can count on 4. But sometimes I don't have it in the morning, sometimes I have it in the afternoon. And in the morning it's not so bad. But that's when I try to get my reading in because they're more alert in the morning.
- I: How would you compare your children's attitudes toward CSMP versus what they usually have in math? Is there any difference at all?
- T: I've always felt that they like CEMREL better. It beats the regular drill. There are different things in CEMREL with all the materials. And it's something interesting and new and even the parents have come over and asked me about it. They didn't understand it. And the kid goes home and says "Mama, look at this, the minicomputer." They don't know what this is all about and they come over and ask me. Quite naturally they want to know "What is this you're teaching because I've never seen it." And they can't help them because they don't know what they're doing. So I've had that happen.

Interview 1 (continued)

I: Is that a good or a bad thing?

T: It's good that the parents are taking an interest and they are noticing it. I like that. Some I noticed didn't say anything because you don't know if they're getting the papers or not. At least it lets me know that somebody's interested in what's going on. I like that. And the parents don't seem too upset. They just would like to know what it is.

I: How do you handle the problem of new students coming in sort of half way through the year?

T: If I think a child is able to handle it I'll let him in. If I don't think he is able

I: So he'll go in the other first grade class?

T: Yes. I've had some kids who come in and just pick up on everything. And I'd say this is not going to hurt, he's going to pick it up. If I see he's dragging and everything else, it just would be somewhat defeating. If he is exposed to some of it O.K. I will expose all the kids to different areas where I think they can benefit from.

I: Now do you kind of work individually with the kids or have them work with another student or what?

T: No. If I think they're going to pick it up I'd rather them be with the group. If they are singled out they sometimes say "I don't know if I want to do this," but if they are with a group to start with they just kind of work and mingle right in with the group.

I: You're fortunate that you have that other first grade because if you had the only first grade then....did you have that problem last year or was it sort of the same?

T: No. Last year it was with the whole group and that was total disaster because I was working with the group with so many abilities from one extreme to the other. But I tried it to see what would happen and it just stopped the class. It was something. But we all lived through it.

I: Could you describe for me the progress your kids have made on the Minicomputer this year in terms of what kinds of things they can do?

T: One problem I was having was trying to explain to them about place value of the numbers. Last year I don't think I had that much of a problem with it. They picked it up. This year if I put up a two-digit number sometimes they would want to put them all on one board. And it never happened last year. And I kept putting it up on the board and showing them and invariably I'd find somebody doing that or reversing the numbers. For the number 12 they'd put 21. And I'd know if I'd say 16 they'd put 61.

I: That's a problem even without the Minicomputer.

T: Yes. But I didn't have it last year. And even at that if you put up two numbers they still want to count a number or a dot that's there. You say "5" and you put something else up that has the same space where 5 is.

Interview 1 (continued)

Sometimes the kids will look at it and say "Well it's up there already." Then I'll say use all the yellow ones for this number, use all the blue ones - so they can see the difference.

I: Can they make the plays on the Minicomputer forwards?

T: The backward plays are hard but the forward ones they can get.

I: What do you think of the spiral approach now after 2 years?
That is, the idea of brief exposure - do you like it?

T: It works. Sometimes I think that it teaches them to pick it up faster. If they are not picking it up then you get frustrated. And then when I notice some of the things in the second grade room - it's actually some of the first grade, going over it again. So I don't feel so bad. I think "Well they're going to hit it again."

I: Did you find that a bit frustrating the first year?

T: Yes. I wanted them to pick it up but then when I realized that they were going over the same kind of materials, basically the same kind of spiral approach, I said "Well maybe they'll get it a little bit more next year."

I: Were your students able to do the arrow diagrams, let's say the ones in the workbook? Could they understand the idea of arrows?

T: They got the understanding but occasionally they got mixed up. Like if they were doing +3, +2, +3, +2 somewhere they might get mixed up and put the wrong number there. I tried to break it down. I think it was even difficult when I was trying to break it down to show them actually writing out the number sentence. That took a longer time and some of them got confused but then I said, "O.K. wait a minute, if you can get it this way fine." But I was trying to break it down so they could see it. Some can break it down and others you've messed them up.

I: But they could do it without writing it down and having to formalize it?

T: Oh, you mean like pictures or something?

I: No, I mean you might have 2 and if the arrow was +3 you might put " $2+3=5$." You mean to spell it out. Did you find some kids who could use the arrow correctly but had difficulty when they had to actually formalize it into a sentence.

T: Right.

I: What is your overall evaluation of CSMP now that you have taught it for 2 years?

T: I think it's good.

I: What are the best and worst aspects?

Interview 1 (continued)

T: I would say the worst would probably be that I would want more remedial work. If you've got a group of kids who need more work at a slower pace. The strengths of it are I think that still you have more material to work with, its variations. Every day it's not the same thing. It's new and it's different, the kids like it, and it's an approach where the children are using game-type things, and even the lessons are slow enough to show what you are supposed to do step-by-step. But I think sometimes teachers want them to catch on a little bit faster than some of them do. I've got some that even when working with the minicomputer are competing with their friends and always looking on with them and sometimes it gets frustrating. They don't get it and I get frustrated if I know they should get it.

I: Anything that you'd like to add about the program that I haven't asked or that you'd like to volunteer?

T: The only thing I would say is that if you had something for the slower kids because I haven't had as yet a group that's really where I'd like to have them. I don't know if every year it's getting worse or what kind of group of kids I've got to work with, but it gets kind of frustrating and sometimes when you get children in from kindergarten they've already told me, "Well you've got your hands full right now, because we've had to really struggle." So I think maybe if you had some kind of pre-testing.

I: If you had a screening test how would you use it?

T: I've got some kids who are able to write from 1 to 10 and I've got some who can't.

I: So this would be a test to specifically determine what kinds of skills they need before they're ready for any math program. How would you handle teaching them if you had these, say, 5 or 6 children or something like that?

T: That weren't able to get into the program? Then here again they would go into the slower group. If you've got a child who is able to see 3 means 3 pictures, 4 means 4 pictures - these are skills they should have in kindergarten. If they aren't getting those skills in kindergarten and you expect them to go into a program -

I: Now you say they'd go into the slower group? Who would teach that?

T: It would have to be the same teacher. I'd have something for them and something for the other group - the regular group.

I: So you'd have 2 classes throughout the year then with one slow group perhaps for a month or something like that, you'd help them through the prerequisite skills that they'd need. Then they'd start the program so that you'd always have them sort of behind the other group.

T: Well whatever they're doing in that program you would hope that they would gradually catch up and know what you are doing. It wouldn't be that far off - and they could see some of it. But it would be just geared to a lower point. For instance, if you are working with kids and you are saying 5 and 8 and 7 and 2, with these kids you are working with 1 and 3 or something that they can really grasp. You don't have to throw large numbers at them too fast. But they are still working with the same basic things, they are real easy and simple to you and you hope that eventually they get it.

T: Although with things like numeral writing and reading you really are stopped sort of because you can't even get to the other concepts.

Interview 1 (continued)

T: Right, if they don't know what 7 is, and 7 pictures, then you are in a jam. I've got some that just don't know. They write any number, reverse the numbers, backwards - they don't know what that number is. They can't identify what that number is or even associate matching pictures. Then you are just wasting your time. So this is what I'm saying - if they had something like that in kindergarten and then these kids are getting the skills and they are ready to come to first grade, great. But if they are not getting them there, you certainly would just be going up against a big wall in first grade. And it's kind of unfair to the kids to put them in that position.

I: What is your opinion of the Minicomputer?

T: I think it's good. I think it should be throughout the whole grade school. I figure that in first grade they are not going to master it but they are going to get the basic skills and again in second grade it should get better. It should continuously get better every year. Anything to start with is not going to be the best but it's at least a start.

Interview 2

I: How many students are in your class?

T: Thirty-five.

I: Do you teach math once a day or twice a day?

T: Twice a day.

I: About how many minutes all together?

T: Oh, about 25 in the morning and about 25 in the afternoon.

I: Is this about the amount of time you have normally taught math per day?

T: It's more or less the same as I used to have. Now there are some days I'm not going to have any math in the afternoon so I have it all in the morning.

I: Have you heard anything from the second grade teacher about your kids from last year?

T: No I haven't.

I: How did this year go for you and your class compared to last year?

T: Well as a whole I think I did better, but I don't think my children did as well because my class was not as stable as it was last year. I had more transferring and so I had to do a lot of re-teaching.

I: Are the kids about the same ability level as last year? How did they compare?

T: More or less the same.

I: How far did you get in the sequence this year?

T: 172.

I: How did this compare with last year?

~~T:~~ Comparable I would say.

I: Was it as far as you had intended to get this year or were you slowed by the transfers.

T: No I intended to get farther but I was slowed by the way the children come and go.

I: Did you omit any lessons this year?

T: Not one.

I: Did you use any supplementary materials like worksheets or things that weren't a part of the CSMP materials?

Interview 2 (continued)

T: Yes I did.

I: Were they your own or were they commercial?

T: Some of them were my own and some of them were commercial.

I: And were they basic skills?

T: Things like the clock.

I: Oh, I see. Can you give some more examples of what the worksheets were like?

T: Clocks, inch, and just common measures.

I: Was your preparation time reduced this year?

T: Somewhat.

I: How would it compare with previous math textbooks that you taught from?

T: I would say the initial year of anything takes more time but after that you are half-way familiar. But you have to prepare yourself for it. So this is about the same.

I: Did you manage the materials any differently. Store them or anything like that?

T: Yes I did. I did store them a little better this year because I got the workbooks and I put them in boxes and put the numbers on them.

I: So that made it a little simpler for you?

T: Very much so.

I: Do you use the workbooks for checking much?

T: Yes I check.

I: Do you think there is a need in the program material for student evaluation tests built into the materials or did you find the workbooks were sufficient for your purposes?

T: For those who were mastering it I found the workbooks sufficient but for those who I felt were not getting the required skills the workbooks were not sufficient. If we did a workbook together when I taught it they would do fine as long as I was there to guide them.

I: Do you feel the need for more elementary level work - that kind of thing?

T: I think they are elementary enough, but I think if I could get the children initially and teach them for the whole year then it would be different. But when they come in late and you try to go back and they have so much to learn and to retain, then this is too much for them.

I: Would you like to see student evaluation materials which would help you grade their work so to speak or do you think the workbooks are enough for that purpose?

Interview 2 (continued)

- T: I think the workbooks are enough for that purpose.
- I: Did you find that your students who had some kindergarten work in CSMP were any better prepared than the other students?
- T: I think in some areas they were. I would say for F-blocks, and the A-blocks, the cuisenaire rods.
- I: Were they any better with arrow diagrams for example?
- T: Arrow diagrams? No.
- I: How did you handle this problem of students coming in mid-way through?
- T: Twice a week I would take them in small groups - 9 of them in a group though it depends on the group. And I would work just with them and we would go back and we would start with the Minicomputers and arrows and introduce them to the language of the program and then we would work together on the board and on paper.
- I: Did you find that they were gradually catching up with the other students?
- T: No.
- I: You sort of had two classes then for the year?
- T: No I didn't have two classes because I didn't work with them everyday individually or as a group. This was twice a week.
- I: But on the days when you weren't working with them were they able to do the work the rest of the kids were doing?
- T: As long as they were working together, but if they were on their own I would say no.
- I: Do you think there needs to be special materials built into the program for students who come in late like that or is it a problem that's going to be tough no matter what happens?
- T: Well they have to re-vamp a lot because their exposure is different from the other math. And when you start talking about strings and dots, and arrows - this is a foreign language to them. So I would say that special material might help but I doubt it.
- I: How did you handle the slower students? Did you work with small groups of them?
- T: Yes a free day was really used for my slow students and it's surprising as much as we counted, the number line is still not that good. Some of them don't even know the numbers.
- I: Can you describe to me the progress that your children have made on the Minicomputer?

T: Those that have mastered I would say fantastic.

Interview 2 (continued)

I: Can they make plays and calculate and things like that?

T: Yes. With or without.

I: What about the slow students?

T: They have learned the number names for the colors - that's all. And they can make simple plays, you know. And they can show you 1, 2, 4, and 8, and maybe 10. And as long as you're working with them - yes. But by themselves, independently - no.

I: Do you like using the Minicomputer in teaching math or do you think that for those reasons it is causing too much difficulty?

T: I like it - I enjoy it. I really do. And I think the children enjoy it. Whether they can do it or not.

I: Do you still think they are getting something out of it?

T: Yes.

I: Were your students able to do the kind of arrow diagrams that were in the workbook independently?

T: As a whole - I'd say 60% of them independently.

I: Generally what were your students attitudes towards CSMP?

T: Wholesome. Very. They enjoy it.

I: More so than previous math programs would you say?

T: It depends, because you had some fun lessons with our previous math program. But I think it was a bit better.

I: What did you think of the spiral approach?

T: I liked it.

I: Do you find that it works out fairly well - that the kids do well eventually?

T: If time is long enough - yes.

I: What would you say the best and the worst aspects of the program were?

T: The best aspect is that you had so many built-in things that they had. The worst aspect is that so much is required. The children are required to remember so much. It's all right if they have the ability but if they don't it's just too much for them.

Interview 2 (continued)

- I: Do you think that for slower students this program is not quite as good as a more traditional one?
- T: I would say it's tough there too. Slower students just have to keep going over and over and over whereas the more alert children have the ability and are able to digest more.
- I: Are the problems any different with the slow children in this program or is it basically the same kinds of problems that you always have?
- T: I would say it's a little different because well with strings, we never called them strings before but they called them sets, put them in circles, but the arrows - that's a problem. They can do a simple one. If the one in the book is too hard I'll give them a simpler one. And they'll do fairly well. Then I'll turn around and give them an independent one and some of them will do one number right but the others they won't do.
- I: Well, that's all the questions I have. Do you want to say anything that we didn't get around to?
- T: No. There's really not anything special I feel that I have been doing. And I feel basically that my children have enjoyed it.
- I: But you'd like to have a class that didn't have so many new students coming in some time.
- T: I don't mind that. But I would like to have children that came in with the lingo or the language of the math program was familiar to them.

Interview 3

I: How many students are in your class this year?

T: Twenty-one.

I: Do you teach math once a day or twice a day?

T: Once.

I: About how many minutes all together?

T: Gosh, averaging of course I guess it would be about 40.

I: Now is that about a typical amount of time that you would have spent ordinarily in teaching math in first grade?

T: I spent - well this year I didn't spend as much time on CEMREL as I did last year. But still it would have been more than had I been teaching Addison-Wesley.

I: How did this year go for you and your class compared to last year?

T: Not as well. I just had several things going for me last year. First of all _____ was always available and came over frequently and could really help me out with any kind of problem that I might have had. And then last year I had a student teacher too. Plus I had a different math department chairman and she provided me with two boys who came over every day during recess which was right after math and sometimes during it if they'd get there a little bit earlier. And as far as workbooks go and things like that - they graded all workbooks. They did all of that for me and that gave me time to work individually with the students who were having problems or I could work with small groups who were weak in one area. And then as I said I also had a student teacher for half of the year - not the whole year. But I had her for the first half which really got me off the ground. And then from there on with the two helpers that knew CEMREL although these were junior high students. They were good math students and they could, even though they weren't in the class watching what I was teaching, they could pick it up. I'd just discuss it with them for a few minutes and they would handle all of the workbooks and grade all of that type of material for me. This year I really was bogged down with it.

I: Did that take a lot of time - the grading of the workbooks?

T: Oh, yes. Because I graded every page. Each one and it had to be correct. Corrected until it was all correct.

I: Do you think there is a need in the materials for a sort of student evaluation test at periodic intervals or did you find the workbooks were more than enough for that purpose.

T: I think it would have been helpful. If nothing else just reassuring on what my own evaluations were because they were all through observation of the student. And I don't think it hurts to have a check from time to time just to see it on paper - either to verify what you already know or to find out, "Whoops I really missed on that student."

Interview 3 (continued)

- I: So you mean more than a test - sort of a test with standards that - ?
- T: Just after sections of the material that you have presented I think it would have been helpful if I could have had some kind of evaluation to see if they really did understand it - because particularly this year with workbooks - I allowed the children not to work together but to go to someone else who had already completed the workbook to assist them. And you have to watch out for with first graders pretty closely. I tried to pick the students very carefully and I emphasized the fact that you were just to show them how to do it rather than actually do it for them.
- I: How did your class compare in ability with the class last year?
- T: Not as strong all the way around.
- I: Did you use any supplementary materials such as worksheets or things like that - of that nature?
- T: Yes - quite a bit. More so this year than last year and for a very specific reason. Because I knew the children were not going to continue in CEMREL.
- I: Were those commercial worksheets or some you had prepared yourself?
- T: Combination of both.
- I: Did you skip any lessons this year?
- T: Yes I skipped it on probability. That's the only one specifically. Yes - probability was the only one that I skipped over.
- I: Did you have any new students entering during the year?
- T: I had a couple and one just went to it beautifully and the other one did not at all.
- I: How did you handle that problem when students entered during the year?
- T: Usually going back - particularly of course the Minicomputer would be the first thing. But they entered about the middle of the year so you could catch them up on the spirals or with the arrows. That didn't seem to disturb either child. It's usually the Minicomputer obviously. And as I said one I just gave the little pink cards and would have someone who - within a couple days they already seem to establish one fairly good friend - hopefully it's someone who understands it quite well and can help them with it. I just went to the pink cards and then did some group work, short little Minicomputer group work with the whole room and as I said one picked it up very well and the other one just resented it and turned off - would not do it. And I finally had to eliminate in the workbooks any Minicomputer pages with him. I ought to add at this time this child had some other problems. It was not a typical student.
- I: Did you find there was a difference with the class because most of them had had background in kindergarten with some of the CSMP ideas?
- T: No I didn't notice any difference at all, and I thought I would.

What about the slower children did you work with them in groups or any special way?

Interview 3 (continued)

- T: Well not as much as I did last year. As I already told you I really couldn't stretch myself thin enough to get to them and work with them. I did work in smaller groups, but oh at a very small percentage of what I did last year. You know that's perfectly understandable if you have a student teacher in and you can also either have a big group or small group and then having seventh graders for me made a big difference.
- I: What were the students' attitudes towards CSMP?
- T: They liked it - they did. Much more so than math that I taught in first grade before.
- I: How about the spiral approach? Did you find that it works out reasonably well?
- T: Yes. And the arrows they do very well. I'm just amazed. And the string diagrams.
- I: Did you find the spiral approach was a bit frustrating the first year?
- T: Yes I guess that would be one area. Yes I've got to back track now because the first year I taught it it was harder, you know this was back in September of the first year. They had not seen a spiral before. Now of course with them having it and being familiar with it in kindergarten, yes it was easier to go into that.
- I: So that was one area that the kindergarten did help in?
- T: Right - yes.
- I: What do you think of the Minicomputer as a teaching device? Do you like using it or do you think it causes too many difficulties?
- T: Well last year if you'd said it I would have said very much so. This year I did not do that much work with it. And once again, being very honest with you, I knew they weren't going to have it next year so I de-emphasized it to a point.
- I: It's too bad you're not teaching second grade.
- T: I know it. I know I could have gone right on with it. And last year I would have loved to have had math. Oh, that group. And there was some talk of doing that. I had a stronger group and the kids last year just did so well with it but I had the extra help - there's no doubt about it. I did go ahead in summer school with them though. I taught summer school last year too and I had about half of one of my rooms. I had 3 classes last year of first graders. And with the one group I took them on with CEMREL and about half of them had not had it and this was the top group. And I just allowed the others to go to the workbooks with them and they picked it up and did a beautiful job, even with the Minicomputer. And they did all the pages and spirals. And these were children from other schools. And of course they were top students but we went right on with it. And they did a beautiful job with it even the children who had not had it. Of course I had a half of a room that had already had it so they could help each other. I know something else I wanted to say. There is too much material for first grade. I think I went further at least til last year, so that I went further than any first grade teacher did last year. Of course once again you see why.

Interview 3 (continued)

- I: How far do you think the sequence would go - what would be a reasonable amount? I think there are 308 lessons now.
- T: Last year I got - Oh I guess almost to 250. This year I think I got just past 200 so really to give them more depth I think it ought to be dropped down a hundred. For your general classroom - I'm saying. Now for the top ones I went ahead with those kids last year and I took them almost all the way to the end - the top students. Which is fine, but they could have still done your 9 and 10 workbooks and some of the other materials that you had for superior children. And I find it a little frustrating to realize I'm so far behind and I have all this material left and I know I can't do it. Maybe other teachers don't feel this way, but I really believe there is too much material to cover in first grade.
- I: What kinds of things did you get to with the Minicomputer with the kids? What kinds of ideas, such as forward and backward plays and calculations and things like that?
- T: Oh, yes we did all of that - subtraction and with negative numbers and all of that. I didn't get as far this year.
- I: Now that you have taught the program for 2 years what is your overall evaluation of CSMP - what do you think are the best and worst aspects of it?
- T: Oh, boy you are really getting general now aren't you? I've enjoyed teaching it and I know that the children have been much more enthusiastic about math which is my love anyway, I was a math major before I became an elementary ed. major. Once again I found this year much more frustrating simply because it seems the amount of work and the volume of work and if you check it all as I do and I know that CEMREL doesn't necessarily approve of that, but that's my own philosophy is that if the children are going to do something it needs to be checked. There's no sense - otherwise it becomes busy work and I don't approve of busy work. So it's a little overwhelming in the amount of grading that I had to do and trying to keep up with it this year without any assistance whatsoever. The weakness is the slower student I think. But I think they enjoy it, but I really believe the slower students ought to concentrate on addition and subtraction facts and very much more general work. And I'm speaking about the very slow students.
- I: Do you think those students would be better off in a more traditional program?
- T: Yes I do. Because I have seen sparks with them but overall I don't think that they get the benefit that the traditional program will give them to go on to second grade. Particularly now - see I always have to speak with the understanding that I know they are not going on to CEMREL second grade. They have to go back to the traditional program so those children just need reinforcement on ones and tens concept and just addition and subtraction facts so that they can go into as we teach Addison-Wesley. And I think the slower ones need much more of that kind of work so that they can proceed as far as they can in second grade. I guess it would be different - I'd have a different outlook if I knew CSMP was going on, but in my situation I have known that it's not, so this obviously colors my thinking.
- I: Anything else you'd like to add?

Interview 3 (continued)

T: No, not specifically. As I said I've enjoyed teaching it. I won't be next year. I'm going to be third grade next year. I'm switching to third grade. I know in that questionnaire you did refer to should there be some training. I think there should be for most. I don't think I would have needed any. Now don't misunderstand me - I'm not boasting, but I had a very strong math background in college. All my electives were in math because I started out in math. So I have had a lot of math background and I love math-it's my favorite subject. So I think I could have taught it just going through the manual but overall if teachers have not had this strong math background I think they probably would need some teacher training before they started teaching.

Interview 4

I: How many students are in your class?

T: Twenty-three.

I: Are you teaching math once a day or twice a day?

T: Twice a day.

I: About how many minutes altogether?

T: That depends on the lesson. Usually a half hour is planned. If we finish the lesson early we have a little mental arithmetic or something. If the lesson is too long I usually have to fit it into 30 minutes.

I: So you have about two 30 minute sessions?

T: Right.

I: Is that a little more than you would have in different programs?

T: Usually about the same. The thing I like about it is that it makes you have two lessons. Not makes you, but it does give you two different lessons. I forgot to tell you about the workbooks. I have workbooks three days a week for about a half hour.

I: Is that in addition or is that sort of one of the lessons?

T: That's instead of doing -- usually in the other program the kids would have a seat work assignment that they would complete independently. In this program I haven't done that. The kids work in their workbooks, sometimes they can work on what I am doing, the lessons with the children, usually it's at the beginning of the day. When the kids come in on Monday, Wednesday, and Friday the workbooks are on their desks and they start working on them and then I take the lunches. The kids who are going to work will work and the kids that don't, wait for the teacher and sometimes they work with other kids. That makes it a little bit extra in that you have to set a time for it. I could just give out seat work assignments and then collect it. Here I have to be with them.

I: How did this year go for you and your class compared to last year?

T: It went better. We had a faster pace. Things were more hectic as I had first and second grade. So I really can't give a complete comparison the same as I could have had I had only a first grade class. But we did go faster despite the fact that I had three math lessons a day, second graders too, you know three altogether.

I: How far did you get in the sequence this year?

T: We got up to 263 which was further than we did last year.

I: Did you skip any lessons?

T: No.

Interview 4 (continued)

I: Did you repeat any?

T: No.

I: Do you have any supplementary - ?

T: No.

I: Did you use the workbooks any differently than you did last year. Did you use them any more for checking purposes and recording.

T: I used the checklist to see where the kids - what they were getting. Because that's how I grade them.

I: So this is the way you did it last year?

T: Yes it was the same. I did use the workbooks the same way.

I: Do you think there is a need for testing materials for student evaluation?

T: No. I don't think so.

I: Did you find the workbooks sufficient?

T: Yes they really are. I mean what you want testing for is to diagnose what the kids strengths and weaknesses are, and the workbooks tell you that right away. And I didn't feel I needed any other tests.

I: Was your preparation time reduced this year?

T: Yes it was.

I: Do you think it was on par with a traditional program or was it still more?

T: Well I only taught a regular first grade program one year. I taught kindergarten before that.

I: So it was a new program for you also then?

T: Yes. Only that one I had to do things like make up ditto sheets because the kids could not tackle 365 page math books single bound in order that they had to keep holding it open. So I didn't even use those math books. So the time that I spent with this one was really a lot less. Hardly at all. Because I knew the lessons - I knew where we were going. And I could see from last year what I felt the kids didn't get as well. So I think I really needed less. Next year if I'm teaching it it would be about the same as this year because the time that you don't spend in knowing what the lesson is about then you get to use that time to fill in - "How can I organize a group?, etc."

I: How did you handle the problem of new students entering mid-way through the year?

T: I just paired them up with my brightest - I had the second grade students in my class this year - the brightest second graders. I had the second grade students teach the first graders the minicomputer. And I also had the second grade students teach any of the visitors we had with the Minicomputer.

Interview 4 (continued)

I: Like sixth graders or something like that?

T: No. College students that came in. We had one girl who came to work with us who used to make up math tests for the Harris Teachers College students. And she really liked math and she taught the CEMREL program too; she had been vaguely familiar with it, so I let the kids - the second grade students, because they were very good - the ones that I had. They liked math very much and so I let them work with the new kids coming in.

I: Did that work out fairly well?

T: Yes it did. I also sent flashcards home, those Minicomputer flashcards. And explained to parents why they needed to know these. And you know I had no time to sit down with them myself. For most of the students who came in this year, other than with the Minicomputer and the arrow diagrams I think all the other different concepts were brought up enough times - repeated with the spiral. The kids pick that up. The Minicomputer you needed to be in from the ground floor. And some students who came in later were better math students because they were brighter kids I guess.

I: How about the slower students?

T: I think it's a good program for the slower students. I have no other special time set for math other than the workbooks. With the slow kids I always check their math books first.

I: Do you group them together at all?

T: Only during a lesson where I felt the kids needed it, for example on the Minicomputer pages. I had no time when I worked with any group of kids by themselves. During a lesson time, for example when they have two worksheets it said "Only let your brighter students that finish first," I would let those students have those worksheets and work by themselves. And I'd go through with the worksheets with the kids that didn't do it well - who I knew couldn't do it themselves. And I would do the lesson with them or let them work by themselves or give them help as they went along. That's all I did. They had no extra time of the day where I squeezed in. At free time we would get the Minicomputer. I'd let one of the top second graders come up and put numbers. They like to play school. So they did that. But it was very informal.

I: Were you satisfied with the progress of the slower kids compared to what they might get in a traditional program?

T: I think they made just as much progress. I really do. And the thing that I liked about this program - I really liked the Minicomputer. I do believe that people make mental images. And I really was tuned in to the fact that this program was first and foremost to help people develop logical thinking skills. Math is a tool. And I think this program gives kids mental images to keep in their minds. The Minicomputer being a big thing. They work with the cuisenaire rods. The thing they do is carry them around and they give the kids a concrete way to check. Slow kids that are having difficulty grasping these kinds of physical concepts need something concrete. You're not always sure. Sometimes they need to hear it a bunch of times and the spiral method repeats a bunch of times. I also liked the fact that wherever you want you can follow the stories like Eli. Eli has had more adventures.

Interview 4 (continued)

I make them up as we go along. And things tie in together. And so you begin to look at math not as something - say, "Here's a page - we'll do it kids," but as something that applies to their life. It's something that - when I first had this program I thought, "Gee they don't give them many problems." - you know problem solving. The boy went to the store, he had 10 balls - that's what I think of as a word problem. And yet I really realized that that's what we were doing with most of the lessons. Eli went to the jungle, which path would be the shortest? How many peanuts would he eventually have? or how did they solve? That's what we were doing every day with the story situation and I liked that. I do think it was good for the slow students especially the workbooks. Because they could go through their workbooks. My first year's class was different. They would get bogged down. They didn't want to leave the workbook until everything was perfect. And they'd get mad because there would be a mistake on the page and they wanted a whole new workbook. They were a different group I'd say. But at least they felt that when they finished it, they felt good about finishing it. They didn't rush through. They really labored over it a lot. And I said, "Don't worry about it, don't worry about it." You know I do think your guidelines are very vague on workbooks. Maybe I missed the reading somewhere but they didn't tell you how to grade them or whether the kids should finish it or whether they needed to get them all right. They didn't tell you how you should grade them. So I graded. An F meant go back and finish, a check mark meant you did it fine-you got them all correct, O.K. meant - it's O.K. you have to check this, and an X meant this page is all wet - either I'd tear out another page or - . And I never had time to go back and have the kids sit there and wait for me to get to page 4 so I could tell him or her what to do now. I just said do it and then I would check those pages specifically. But I usually made the kids get the whole workbook right before they went to the next one. This year I began to be a little flexible. I allowed the kids to have a lot of O.K.s. If they had an O.K. on most of the pages or all of the pages then they could go by. At times I felt that some of the slower kids - I gave them an O.K. even if they didn't get it all right.

I: What kind of progress have these kids made with the Minicomputer this year? What kinds of things can they do now?

T: They can do the adding and subtracting, and times to varying degrees.

I: Can they do the subtracting method? Making the backwards plays?

T: Yes. There were some who were pretty good at it. There were others of course who needed to do it with you, others who will do it if you help them set it up. But I think they work pretty good with the plays. Again kids will rush. I thought gee every kid is going to learn how to do math - they don't. Because kids will be sloppy and careless and they'll make mistakes and I think there's a lot more complex thinking involved in just how we make those backwards plays. There's a procedure to start from the tens board or the hundreds board and work backwards that way. But I think they did as good as the kids last year as a whole. Some of the slower kids did better this year than the slower kids last year.

I: Maybe they were better students?

Interview 4 (continued)

T: No I don't think they were better students. When I speak of slower students I don't just mean mentally I mean kids who don't listen well, the kid who's always out of his seat or who cries everytime he makes a mistake. That's what I classify as slow - maybe not progressing at the same level as what I consider the average kid.

I: Do you like using the Minicomputer in teaching math?

T: Yes I think it's neat - I really do. And I love that fourth board. The last day of school I asked the kids what did you learn - he said he learned to do borrowing and subtracting. He felt that was more impressive because he could do it on the Minicomputer, but he didn't think of it as borrowing. He only thought it was borrowing when you put that 1 and you bring it over. But it was neat having the top second grade students in the class. That added a little different flavor. And I did find the first grade kids listening in to the math lesson, which is kind of neat. Last years kids groaned. They said, "Oh your kids are going to love math." Well my class groaned a lot last year. They didn't particularly like math. I thought, "Oh boy."

I: What about the arrow diagrams?

T: I think arrow diagrams are very hard. Perhaps I didn't do a very good job of teaching them, but I found that a lot of the kids couldn't work them by themselves. Either it took too much time and patience for them to get the colors out and make those. They preferred to use pencils and then put the colors by them. And they were sloppy about drawing their arrows. I think it would be nice if they could come from kindergarten with CSMP background because it's a lot to give them. But we used the arrow diagrams and they understood them in the lessons. They all went very well. But in the individual books just the brighter students got those. Yes, just the brighter kids got those real well.

I: What were your students' attitudes towards CSMP? Did they like it a lot better than the class last year?

T: I think they liked it equally well. They seemed to be more enthusiastic. As I said last year's kids kind of groaned a little. Here I was so excited about it and they didn't seem to be picking up on it. But this year's class liked math. They did. And they couldn't wait to do the workbooks. Towards the last days of school they kept saying "When are we going to do the workbooks?" because they liked to do them. And kids who were not the best students; they like working on it - they like thinking about it. The kids did get to go pretty much at their own pace except in the Minicomputer. And the workbooks provided a chance to do that. It would be nice if I could have had time to work them in small groups but I didn't.

I: What do you think of the spiral approach?

T: I like the spiral approach. I think there is a point where you have to have mastery. That's the only thing. I don't know what you expect the kids to have mastered by the 10th week of school or the 5th week or what. I do think it would be nice if, in your program, you could say something like "At this time, at lesson 50 and the third time, most classes have seemed proficient. If your class is not, this would be a good time to stop and take time out because we consider this very essential." You haven't told us what you think

Interview 4 (continued)

is essential and what isn't. I can figure out the Minicomputer is kind of essential. On the other hand I can remember the first year. The guys came to test I thought, "Oh my they are going to ask the kids to do all this." But it was simpler than I thought and I thought "My gosh I thought you would ask for more at this point." So I think it would be good to have them and a teacher could go back and check because kids have to know. You know we have a spiral approach in reading and you have to drill. Some kids need drill on words. Some people need to write, to learn a different way. I'd feel a lot more comfortable having a list of what's expected. They should be able to make this many plays or do this or don't do that.

I: What is your overall evaluation of CSMP now that you have taught it for 2 years?

T: I think it is very good. I like it. I think for me the hardest thing is packaging all those materials. It's just that I'm sloppy about stuff and if I lose it it doesn't bother me. And yet to keep all that together and to get it in and out is a lot of work. And yet I like it. That's the hard thing for me to cope with. This year I didn't have as good a system. I tried to have the kids keep it as much as I could. That was bad. I should have given it out like I did last year. But it seemed like last year I spent so much time giving it out and collecting it, that by the time I had given it out to some of the kids that they learned the stuff anyway. So I guess - all the manipulatives are one of the difficulties. I don't think it had any weak points. I think I mentioned to you about sequence, number sequence. Not having a lot of experience in teaching first grade math I forget to count up to 300 every day with the whole class. "Everybody count up to 300" or "Count up to 150" or "We'll count by 2s today," or things like that. So my kids might have been weaker, say, on sequence things. The kids could figure it out by using their number lines and things but I don't know that they could count all the time the numbers. And on one hand the people say it's not that necessary. Who ever counts to 1000? They didn't stress it so I didn't do as much with it. I don't think it has any real weaknesses. I think it's very good.

I: What are the best things about it?

T: The best things about it are arrow diagrams - those are very good. I think the Minicomputer is good. Eli and the negative numbers I'm not sure. They said, "Which do you think are essential?" I filled out that report. I think negative numbers are a good concept. This is a second grade story, but that's O.K. We were talking about weight. I said that I had gained some weight this year and I had gone up so many, and kids were talking and one little kid said, "Well if I lost weight I'd probably weigh in the negatives." I think it's a neat concept for the kids to have. I think the Venn Diagrams, I would have liked to have done more lessons with those had I had time. The kids really liked that lesson where you put the numbers in. They like those very much. "It can't be even - it can't be odd therefore it can't be in this string." The kids love those, they really like those. I just think the program is well thought out. I think the people who did it must have had fun making it up. I think the kids have fun doing it. I have fun teaching it. I just enjoyed looking forward to seeing what the next day's lesson was going to be. And I'm not the world's greatest math teacher, but I think that adds a lot to it. I'm interested and I've got a lot more ideas about math. I don't

Interview 4 (continued)

think I'll be teaching the program next year. But I've gotten some good ideas and I'm going to carry on with the arrow diagrams, I'm going to do that with my kids, and the Venn Diagram relationships.

Interview 5

I: How many students are in your class this year?

T: Nineteen.

I: Do you teach math once a day or twice a day?

T: No. I teach it for a long period once a day.

I: How many minutes?

T: Forty to forty-five minutes.

I: Is that about as much time as you would have taken in a more traditional program - the same amount of time?

T: I think it is a little more.

I: What would it be ordinarily?

T: Thirty to thirty-five.

I: Have you gotten any comments from the second grade teachers about students from first grade?

T: No I really haven't.

I: How did this year go for you and your class compared to last year? What was different about it? Did you do things any differently?

T: I found with my group this year that I had to review more and to explain more, but this has been true in each subject this year.

I: Would you say this is a lower ability class than last year?

T: Yes, and listening skills are poor.

I: How far did you get in the sequence this year as compared to last year?

T: Well I have gotten as far as I was last year. Now I am reviewing.

I: Was this as far as you planned to get at the beginning of the year?

T: Well I really didn't set a goal. I had gotten to 272 last year and so I thought if I could get there it would be good. _____ told us if we got there we could review and that's what I'm doing.

I: Did you omit any lessons this year?

T: No.

I: Did you use any supplementary materials like worksheets or things that you made up yourself or maybe commercially prepared worksheets?

T: I didn't use any commercially prepared worksheets - I put work on the board for additional seatwork.

Interview 5 (continued)

I: Mostly computational work?

T: Yes.

I: Did you use the workbooks more for checking this year than last year?

T: I have always checked each section. I still don't like to just check only sections 4 and 7. I check each one and then have them correct it.

I: Do you think there is a need for testing materials for student evaluation from the teacher's point of view or do you find the workbooks are adequate for that purpose?

T: Well are you talking about a standardized test?

I: No, like chapter tests that are sometimes in textbooks at the end of a chapter?

T: No I think the workbooks are sufficient.

I: How about preparation time this year compared to last year?

T: It's down a bit.

I: Do you feel more comfortable with the materials after having been through them a year?

T: Yes I do.

I: Do you teach any differently than you did last year - that is grouping students or the way you assigned work - have you changed anything after having been through it a year?

T: Yes I think it's been a more relaxed atmosphere this year and I think on some of the lessons that I condensed it more and still realized the same goals. But last year I was purposely doing this - going strictly by the manual.

I: Do you manage the materials in the same way?

T: Well I think that I stored them in a little different manner this year and I think that since I'm acquainted with the materials it didn't seem quite as bulky as last year.

I: So the problem is more of unfamiliarity with the materials or is it more of the huge amount of them? Or is it a little bit of both?

T: Well I thought it was both last year - unfamiliarity and lateness in getting them. We were two weeks late - while this year they were here when school started. And Mrs. _____ and I went through all the materials and distributed them to the first grade teachers and I checked them off on this checklist and I knew that everything was here before I ever started.

I: How do you handle the problem of new students entering mid-way through the year that haven't been in the program before?

Interview 5 (continued)

T: Well I try to go back and help them with all the concepts that we've had. And this year it's worked in much better than last year because I usually have a little group who need some special work on that area anyway.

I: Do you use any sort of peer tutoring; one kid showing another how to do things?

T: I have - some this year, but unfortunately I only had one who came in late. My problem has been I've lost 4 but only 1 came in late - the others were here when we started the program. So it's really not a true test.

I: With the slower students do you work as a little group with them. Do you do this on a daily basis or once in a while get them together?

T: Well I do a lot of it on a daily basis and then when we have those workbooks, I have the children go back over them and a lot of the problem this year seemed to be that some children just did not understand the Minicomputer. They were as likely to move it from the forty back to the two as they were to make the proper play. And so, if I was busy, a lot of times I'd have them put it on the floor wherever I was with a group and I could watch while I was doing something else. But I think it's been a little unusual this year in that they weren't quite as hep and quite as - they didn't feel quite as free and quite as successful with the Minicomputer. But it doesn't have to do with the Minicomputer.

I: What do you think of the Minicomputer by the way now that you have taught it for two years?

T: I like it because I think they are surprised at the large sums that they can do.

I: What about the slower students - do you think that's a good device for them too?

T: Yes I still think that. I still think there are some who can't maneuver - they can't manipulate.

I: You still think that they are getting something out of it though?

T: Yes.

I: What about arrow diagrams - has that been a problem with the slow students or is that something that they catch onto a little better?

T: No I think that they have done quite well on arrow diagrams. The $1/4$ and $1/3$ and $1/5$ has been a little beyond them. They can get $1/2$ - most of them get $1/2$ rather thoroughly.

I: So would you say the program as a whole meets the needs of the slower students or would you like to see changes made in it?

T: I think for most students that it meets the needs. I think probably - maybe I shouldn't say this but I think that probably with any program you are not going to reach each child.

I: I guess the question is better put not "Are they getting everything they could out of the program" but "How are they failing in CSMP compared to what they might get in a traditional program" - would there still be the same kinds of problems?

Interview 5 (continued)

- T: I think our problems are less because I don't think the child feels a frustration of maybe not getting as much as some of the other children, whereas in a traditional program I think the children become labeled sooner so to speak, you know you can have this kind of thing. And you don't have this.
- I: What do you think of the spiral approach?
- T: I like it.
- I: Did you find it frustrating at first?
- T: Well I think the lateness of the program last year and the newness and all and I think probably many of us encountered problems and frustrations maybe that we haven't felt this year.
- I: Does it seem to be working - I mean do you find that when you come back to a topic a second and third time that more kids do learn?
- T: Yes I think they do.
- I: What about the students' attitudes toward CSMP - do they like what they are doing?
- T: I think they like it. They like it.
- I: More or less or about the same as they might a traditional program or a different reaction in any way?
- T: I think the children - the room as a whole - the children as a whole student body, or as a room body I should, say look forward to math maybe a little more because I think under the traditional math as I taught it for years and years and years you have the child who - "Oh, time for math" - and immediately you had some who wanted to go to the rest room and some had developed a headache, and you don't have this kind of thing anymore. So there's something there that they like and they love the workbooks and they're fascinated by them. And when they're anxious to look through to see what they have to do. And many of them will not work the first page first - they see a page they'd like to work better and then go back and - they'll do it first and then go back and get the other pages. I think there's more of a selection of likenesses or what really appeals to them and they'll do that first.
- I: What is your overall evaluation of CSMP now after 2 years? What are the best things about it and what are the worst things about it?
- T: I really don't have a real criticism of the program. I would like marble shakers to be a little more substantial. That's my main criticism. As far as the skills we're developing and the goals we're reaching in the program - I myself am happy with it because I think the children are reaching the goals in a more relaxed situation than they were in the traditional program. I think they are doing more things with the same - you can only do 4 things with numbers - I think we do three of them quite well. And I think they are happy with it.

Interview 5 (continued)

- I: Is there a need for more materials for the slower children at the beginning of the year? Worksheets and workbooks especially?
- T: I think this year more than last I believe there are instances where we could use some of those lower workbooks. Maybe a few more of them.
- I: That's all the questions unless you'd like to get your two-cents in.
- T: I'm still very happy with the program myself. It does take time but I think the children are enthusiastic about it. And the parents - we held a demonstration for PTA one evening and for Mothers' Club one afternoon and I think the parents were very surprised at what the children could do.
- I: Did you show them the Minicomputer?
- T: Yes. And we did arrows and this kind of thing. So - oh yes for our Mothers' Club we had tables set up and the child could go to their mother or someone and we actually did computations on the Minicomputer. And the children were teaching the mothers. I think that they really enjoy Eli the Elephant. I've found that this year mine have not quite gotten away from the magic numbering to a negative-positive numbering because negative and positive are words that are a little bit beyond them. And Goldy - well I like Goldy especially because under traditional math I have really worked hard to get greater than and less than - with Goldy they know - there isn't a frustration there.

Interview 6

I: How many students are in your class this year?

T: Sixteen.

I: Do you teach math once a day or twice a day?

T: Twice.

I: About how many minutes altogether?

T: Fifty-five.

I: Was that a little more than what you would usually have spent?

T: Yes. I'd say about 35 minutes to 40 minutes - something like that.

I: Have you gotten any feedback from second grade teachers about the first grade students you had last year?

T: Yes. The teacher next door, Ms _____, told me that most of the students that had the math in first grade did very well. And they picked up on the minicomputer right off the bat. There were a few that still didn't let's say "catch on." But I'd say maybe only 2 out of the whole lot.

I: How did this year go for you and your class compared to last year?

T: Better. Much better. I didn't have to read the lessons as intensively as I did before. Because this time I would glance over it - I could remember a lot of things from last year.

I: Was your preparation time this year about as much as you would have spent on math ordinarily or was it still a little higher do you think?

T: No I'd say about the same.

I: Did you get further in the sequence this year?

T: Oh, yes. I think to 283 - something like that, whereas before it was only about 250.

I: Did you set any goals for yourself at the beginning - how far you would get or just played it by ear?

T: No. Just played it by ear.

I: Did you skip any lessons this year?

T: A couple. The ones on the converse arrows - return arrows. Because some of the kids just did not get it and I had some slower students this year and I could tell that it just wasn't getting through. It was too much for them.

Interview 6 (continued)

I: Did they have problems with arrow diagrams in general?

T: A few of them. So when I got to the return arrows - no way. So I did skip a couple of the lessons like that but those were the only ones.

I: Did you repeat lessons at all?

T: No.

I: Did you use any supplementary materials like worksheets or anything like that?

T: I used a few worksheets on my own. They were just math facts in general.

I: Did you use workbooks more for checking this year than last year or any different way?

T: No. About the same.

I: Do you think there is a need for student evaluation materials as part of the program or do you find the workbooks are enough?

T: I think the workbooks are enough - yes. The kids really like them too. I'm still amazed at that. And they ask me after school "Ms _____ can I have a math workbook to take home."

I: Did you manage the materials any differently than you did last year?

T: Somewhat - not much better than I did before but somewhat. I had it a little bit organized. Because I had the materials before and I knew what was coming and I knew what it was like.

I: Is that still a bit of a problem - the mass of materials?

T: Yes. The storage I think really. I think if I had had more time I would have filed the worksheets some way where it would be easier to find them. Because otherwise I'd end up going through boxes and pulling out sheets and workbooks all over the place.

I: How did you handle the problem of new students entering half-way through the year?

T: I didn't have any.

I: How do you handle the slower students - do you work with them any differently?

T: Well when we would have the free days usually I would take the slower students in a small group. Many times I'd have the faster students working on workbooks and take the small group and go over some of the things like the Minicomputer, multiplication - other things I could tell they just didn't get. And then many times I'd use some of the other students in the class to help the slower students. It worked out nicely. They really liked the tutor system anyway.

I: Were you satisfied with the progress of the slower students compared to what they would have done in a regular program?

Interview 6 (continued)

- T: Yes - at the end, now. But before I felt somewhat like I did last year. I felt like I'm just going over the heads of these kids and they're just not getting it and I feel like I should stop. I can see two different levels. They either have it or they don't. But now in the last month I have noticed progress of the slower students. And I can tell that they have caught on to many things. I thought they weren't getting it. But something they got from some place.
- I: Did you find that frustrating the first year - this spiral approach? The fact that it wasn't mastery.
- T: Yes. Because I think the students - the slower students this time got it more so than the students last year. And I don't know it might have been partially myself - not being as acquainted with the materials of the program as I am this time.
- I: Do you think the program adequately meets the needs of the slow students compared to what they might get in a regular program?
- T: I think it meets a lot of needs but I don't think it meets all of them. I think on the whole the program is really good for faster students and average students. But I think for just the basic math facts they may get more out of a traditional program than they would from CSMP. I'm just guessing.
- I: Can you describe for me the progress your kids have made on the Minicomputer? What sorts of things can they do on it?
- T: Well they can make forward plays, backward plays. They can do addition, subtraction, multiplication, including fractions-multiplication of fractions.
- I: How about the slower students - can they do some of these things?
- T: Now - like I said again now in the last month or so they have kind of picked up on it. Before - no way. It was just completely over their heads. In fact they would even get mixed up on things such as is this 10 or is this 1, the really basic things. But now I can notice some real improvements.
- I: Do you like using the Minicomputer or do you think it causes more trouble than it's worth teaching it?
- T: No. I like it. I think it gives the kids a better concept of numbers. I guess numbers seem more concrete. They are very abstract in the beginning. And for first graders it makes numbers more concrete. For instance if they are putting one on the Minicomputer to them that is a one - they can feel that when a checker turns into a one. When you say $8+2=10$, well I can tell that they are just memorizing that and saying $8+2=10$ but then after a time, after you get into more complicated number facts, you can tell you really have to understand this and it's not just a bunch of squares up there. They can really see some concepts.

Interview 6 (continued)

I: Generally what were your students attitudes towards CSMP?

T: They liked it.

I: What things did they like about it?

T: Oh, well the C-rods first of all. The workbooks, they liked the marble shaker races, the tangrams, they liked the Minicomputer but they had gotten to the point in which they did not want to use it solving the problems. For instance if there's a worksheet and it says use your Minicomputer to solve these problems. Well I had taught them how to solve the problems after working on the Minicomputer just on their own - just pencil and paper type thing. And we used solving the problems with pencil and paper as a check on the Minicomputer. But they had gotten to the point in which everybody was kind of cheating and I'd say O.K. solve a problem on the Minicomputer and they'd just go ahead and solve it themselves. They thought "Wow we're so sophisticated now we don't need this any more." Nothing is wrong with that, but it was earlier this time than it was last year. And again I don't know what that could be attributed to but - you know it kind of frustrated me for a while because - but I guess I was thinking that they were going to use it in second grade. But I really wanted them to understand how to make the plays and so on. And I told them "O.K. we're going to learn how to do this two ways - it's nice to know how to do it two ways." And I think they kind of grabbed hold of that. And they said, "O.K. It is nice to know how to do it two ways." And they seemed super smart.

I: What is your overall evaluation of CSMP now that you have taught it for two years? What are the best and worst aspects of the program?

T: I guess the best part would be the enthusiasm of the kids and seeing the kids do things in math that most people didn't consider first graders doing - multiplying for instance and subtracting 2 and 3 digit numbers. I think that's the best part of it. The kids that are really capable - it brings out a lot in them. It really does. I guess the worst part to me would be just that frustration level that I reach, in which the slower students bother me. And I know that you would have slower students in any program. If they are slow they are going to be slow. But I think in CSMP I feel it more so than if I were teaching traditional math. So I guess just that frustration is the worst thing. But as I said this year they are kind of coming out of it.

I: Is there anything that you want to add that we didn't cover?

T: I enjoyed teaching it. I wouldn't want to go back and teach Addison-Wesley or any of the others. If they told me that I would be very upset. I really like it and I think that this year, the second time around, I can tell I'm just into it now. I just really know it and I really enjoy teaching it. And I put a lot of dramatics into it. One of my favorites is the Booker's Bakery, you know. And I pretend that I am Booker and the kids really like that too. And making up the little stories and the stories that are suggested in there. So I guess that's it.

Interview :

I: How many students are in your class?

T: Twenty-nine today. Thirty last Friday. We lost one - but it's been 30 this year.

I: Do you teach math once a day or twice a day?

T: Once a day.

I: How many minutes altogether?

T: About 40-45.

I: And is this about the amount you usually taught math in non-CSMP classes?

T: It's more than I would have taught a traditional program.

I: How much would you teach in a traditional program?

T: There were days when I didn't teach any math because reading had priority. Last year I taught - I would generally have two periods but I had a much smaller class last year. And this year with 30 I had it once a day generally. And we have had it at the end of the day or I've had mental arithmetic different times during the day. But a 40 minute structured period.

I: Has the second grade teacher said anything to you about your students from last year?

T: Yes she has been very complementary. At the beginning of the year she was just amazed at what they could do. So we kept in touch. I wanted to know how they had succeeded - how they have been doing. I was curious to know how they fit into the second grade program. Apparently the few - of course who had the problems - still do.

I: How did this year go for you and your class compared to last year?

T: Well of course I had a good year's overview of what we had to do and I was more relaxed and I had a month's loss last year waiting for materials. Then I felt pressured when I did get them. And I wasn't sure how things would fall into place. Bookkeeping and just organization was more of a problem. There was no problem this year whatsoever. Just seeing how things would fall in, I knew that there would be worksheets that would supplement, or at least support the workbooks. And I was very relaxed about it.

I: Did you use the workbooks more for checking this year than last year or how did you use them?

T: I check every workbook of every child - every page. And to me that's a real indicator and I use that as a guide to re-teach or review. They are very important to me.

I: Do you think there is a need for testing materials for student evaluation?

Interview 7 (continued)

- T: Not really. I really believe there are so many of the workbooks that that is sufficient.
- I: Did you omit any lessons this year?
- T: I omitted probability - most of that. And I did omit, after a while, many of the attribute blocks. I did take the first few, the first seven maybe.
- I: Did you get further in the sequence this year than last year?
- T: Yes - I am further. I may have gotten to lesson 260.
- I: Was your preparation time reduced this year?
- T: Somewhat yes, but I still felt a need to review the lessons.
- I: Do you find there's more preparation involved with CSMP than with the traditional program?
- T: Yes.
- I: Did you find that those students who had CSMP in kindergarten last year were in any way better prepared for this year?
- T: Of my class this year I had only probably 60-65% who had been in the kindergarten program and for the most part were the top students. So I feel that I really couldn't make that comparison.
- I: How did you handle the problem of new students entering mid-way through the year?
- T: Well I had several come in up to October 1. That was no problem. And I did review. I would present to the class - "We have a new student" and I would ask the student before the class "Have you ever seen the Minicomputer before?" - "No." - "Well let's teach him, let's just show him." Then I would let children come up and I'd let them explain the relation of color to number and what we could do as far as we had advanced at that time. And I did that even - we had a child late in the calendar year - I think it may have been December - and I let them just pretend and they delighted in that they were telling somebody something and I thought it was a very good review for the child.
- I: Was it sufficient for the new child?
- T: He was very, very low. He was not succeeding in math and when I gave them individual tests he began to catch on. He is gone now. He probably would have been retained in my classroom. Then the child who has just come in about 2 or 3 weeks ago I've just not tried to catch him up.
- I: How do you handle the slower students?
- T: Well sometimes I take a group of them back to the back chalkboard and we will do a similar arrow diagram, or something similar while the rest of the class goes on. And then peer teaching is very strong in here to the low ones. And then I give them extra worksheets and make things for them.

Interview 7 (continued)

I: Were the worksheets ones that you made up yourself or ones that you had around from before?

T: I made my own. I'd make a master or something that we've had. No commercial worksheets whatsoever.

I: Were you satisfied with the progress of these slow kids compared to what they would have accomplished in a regular program?

T: Oh yes.

I: Do you think the program adequately meets their needs?

T: Well I feel especially in the first quarter we need more worksheets with a little slower pacing and basic computations, adding and take away. Or even simpler arrow drawings - I think we need a little bit more geared to them.

I: Were your students able to understand the idea of arrow diagrams?

T: Oh, yes that was understood and they accepted it. They liked it.

I: Could you describe for me the progress your kids have made on the Minicomputer? What kinds of things can they do?

T: As far as place value I think it's a wonderful means to teach place value as we have it in our system. They can add very adequately in the hundreds - most of them. They can multiply - they love to do that. And then in subtraction I have put more emphasis than I did last year because we're further along. We've done a lot on subtraction and I feel that they are better able to subtract and I'm stressing the reasons - the regrouping concept. I'm using that a little stronger than I did last year because I feel I'm more capable of seeing it. But I do feel like the Minicomputer helps.

I: Do you like using it?

T: Oh, they love it.

I: Do you like using it?

T: Yes - I too.

I: Generally what were your students attitudes towards CSMP?

T: As last year they got excited when it was time for math and most of them were very attentive. They responded to the stories, to the posters, and it seemed like once they had accepted the fact that math is exciting by these visual aids we had and by the type of stories and all, and even if a lesson might have been mediocre they'd already accepted and built up a concept that this is fun.

I: Is this different than a first grader's usual attitude towards math in a traditional program?

T: Yes and I think part of it was that I had slighted math in many respects because adding and subtracting - it's not too exciting.

Interview 7 (continued)

I: What do you think of the spiral approach now?

T: Well I am a teacher that wants to feel that everyone has gained, has learned and I know that will never be in any class. I work towards that goal. It's hard for me to accept that some just aren't getting it. And I'll work in other areas or devise some other means that perhaps if I do it this way, then most of the children will get it. I don't know how other teachers do but I do follow-up and review and maybe I stay with the lesson longer than say 10 or 15 minutes, but at the end of that time I'm not at ease to move on and I think well - the next time. I do probably stay with it longer, or go into it.

I: Do you find the spiral approach a bit frustrating?

T: No not terribly frustrating. I'm more relaxed this year about the spiral than I was last year. That's the kind of personality that I have - I want it done now. And I have had to adjust my own thinking along that line. But then I find where we pick up a new workbook and I'll say "Now boys and girls we did have that and it is somewhat similar to that." But I think that's an adjustment that I've had to make.

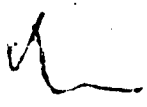
I: What is your overall evaluation of CSMP now that you have taught it for 2 years? What's the best and the worst of it?

T: More better than worse. I just think it gives the children such a good relationship between numbers and that they are not isolated. This is not isolated here but it's more of fitting things together. And I think who-ever compiled it really took into account some other concepts besides number because they have interwoven many of the readiness skills. It supports - the first 6 weeks - so many things and color and sizes and shapes, and even the beginning consonant sounds as in Mr. Booker's Bakery and I'll emphasize that. Basically I think it's exciting because they do see how numbers relate in the arrow diagrams. They love the blocks. That to me is a quiet time thing. There is so much that can be taught with color and size. It's the manipulatives that are so interesting. And when my children have a free time they make the tangrams come out - the blocks come out. They'd go over to the busy box. They go back - I have this one section of the chalkboard and more than anything else I see arrow drawings, I see greater than, less than. So I feel like it's become a part of them. And it must be pleasant because whenever they have a free time they use it. And I really feel they are further advanced even in computing the basic processes than in a traditional book. And it is exciting for them and I think it gets them to think logically. The Venn Diagrams I think help to teach logic - almost a lost teaching today. It's such a variety of legitimate lessons that there is no chance, even for a teacher to get bored. I'm just as excited this year as last year. The frustration I think for CEMREL is there is so much if you are a person who wants to make use of it. You find you wish you had more time. I have learned to organize the materials. That was kind of aggravating to me the first year getting things in line, but I have them in my mind first of all now and it's no trouble to pull them out.

I: What about the worst aspects?

T: The worst aspects - there's not enough time to teach what all you give us. Really. Probably the worst would be not having on my fingertips a little more material for the slow. More time in our days, it's not your problem.

Interview 7 (continued)

- I: How does the ability level of your students as a whole compare this year with your students of last year?
- T: This year I have a few more better students than last year. I had some real low ones last year. I don't have as many that low, but I have emotional problems this year. Other than that, I think we had some key boys in that last year's class who were willing to spontaneously share where this year not as many are willing to. It's a different group. We had some who were very outspoken last year, who led the class, where this year they're not quite like that but they're good students.
- I: Anything else you'd like to add that we haven't covered?
- T: I just think that it's exciting to get the parents involved. The children have carried home their own Minicomputers - and have used this to teach their family and I have talked about it in all my conferences. We bring it up because I know some of the parents might away have this hangup - "I don't care, I just want my child to add and subtract." They do not envision what math is. When we have brought it in they seem very comfortable. However, next year I'm going to do something different. I'm going to save my breath, a little bit and I'm going to have my own time where I ask all the mothers who don't work to come in and I am going to have demonstrations with it. We have a very good group of parents and they are interested to know and I think most of them now have accepted that it's a pretty good thing.
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Interview 6

I: How big is your class, how many students?

T: Right now I have 26.

I: How many times a day do you teach math?

T: Usually twice.

I: About how long altogether?

T: Altogether at least - let's see it's always 45 minutes in the morning and I'd say at least another 20 minutes to a half hour in the afternoon.

I: So it's an hour to an hour and fifteen minutes. Is this more than you would ordinarily spend in math - in other years?

T: Well I've taught CEMREL ever since I've been a first grade teacher. But as a fourth grade teacher I probably would have spent at the most an hour.

I: How does your class compare with last year in the ability of the students?

T: I would say those kids that are average to top I can see that they had CEMREL last year. They were very aware of what they had picked up - the kids that I had. I've got about half new and half not. The slower kids still seem to have a lot of trouble.

I: Would these kids be about the same reading level as last years - about the same ability?

T: Yes. I would say it's just as mixed.

I: That was one of the other questions I wanted to ask you - whether you noticed any effects in having kindergarten?

T: I think especially with the average to above average. They knew about the computer and a few of them knew the value when they came in here just from having it in there. And like when we started out doing string diagrams they'd say "We did that last year" or "We did that with Mrs. ____." So yes.

I: How did things go for you the second year as compared with the first year?

T: Much better. I feel more comfortable with it. Last year when they didn't get something I'd feel like I had to stay there and go over it. But I find if I just keep going they do pick it up. _____ kept telling me "Don't worry about it they'll pick it up." And they do. I'm much further this year than I was last year.

I: What sort of changes did you make this year from last year?

T: I did more grouping - last year I really didn't do any grouping and stuff - like the workbooks - I did do that individualized. But this year, when I see a group having trouble that I think they should be catching on, I'll sometimes take them out and give them a little extra and give the other people a workbook. I'm not so afraid to kind of move away, to give them an extra workbook or that kind of thing.

Interview 8 (continued)

- I: Is preparation time reduced a lot for you this year?
- T: Quite a bit. Because I really felt that the lesson plans were so adequate.
- I: Did you skip any lessons?
- T: No I never have skipped a lesson.
- I: Did you repeat any lessons?
- T: Every once in a while on a slow group I noticed more that they have a lot of trouble - they really get the Computer but when they do it at their desks they have a lot of trouble, even my better kids. I've been trying to watch them. I think a lot of times it's because the checker will just kind of scoot and they don't realize the number. So we've done that a little more than it really calls for and you know when we have some extra time we'll take them out and do them that way.
- I: Do you store the materials any differently?
- T: No. I just put everything in boxes like this, nothing seems to be too big, and I keep everything. They never keep anything in their desks. After they finish using it I take it back from them.
- I: How do you use the workbooks now?
- T: O.K. Now when I start a series with the kids that are having trouble I start on 1. And usually the kids I feel are average, but I'm not really sure of, I start on 3. And then there's a little group that I start on 5. They work on their own. It's usually about maybe 45 minutes and I'll walk around and if one finishes a workbook and it's pretty much right then I'll give him another one. If they don't finish even one workbook then that's where they pick up the next time.
- I: Do you think there is a need for student evaluation material built into the program or do you think the workbooks serve that purpose sufficiently?
- T: When I mark down a grade I pretty much mark 4 and 7, I grade there. And if they don't get those two I'll go back to that workbook with them and see what they've missed on that. So those are the two grades. I think that's how I read it. That those are the two important concepts in each workbook.
- I: Did you hear anything from the second grade teacher about your students or anything like that?
- T: No. _____ is teaching CEMREL downstairs and her only concern is with the slow kids. We talked about that a little bit. And she asked me if I found that they had trouble. I feel that they had trouble in all math programs. At least there are things that they can do and they get excited to do math.
- I: How do you handle the problem of the slow children especially in a spiral kind of program like this?

Interview 8 (continued)

- T: Well I think it meets the need better because at least the workbooks are geared to them but I'm sure that really they don't get all the things that they should. I just feel like they're not completely lost. And even as a fourth grade teacher there was always that little group that, no matter what you introduced, just really couldn't do anything. Yesterday on the Minicomputer we were doing backward plays and my little ones, the slow ones, had a lot of trouble with that and they still do. But at least, after we would do a couple of those, then I would let them do something easy. It's kind of neat to see them. But I feel in first grade they're really not expected to master everything. I don't know the second grade program which I think I may be teaching next year. I might have a split class. But if there's mastery maybe that's where they master it, I don't know. I feel the average to the above average definitely do have the mastery.
- I: Do you work in small groups with the slower students or do you have any special ways of working with them?
- T: Well I usually pull them aside. Now I have an aide this year. A lot of times when it's a lesson (I always do all of the lessons unless there's something like a workbook) _____ will walk around with the kids who are getting it and I'll pull those little slow ones out and we'll work together. Or sometimes we've started SRA Reading and again that's the top kids that are doing that. So when they're doing SRA it's another chance for me to pull and we'll just work on something that we've worked on in the last week that they seem to be having trouble with or play a game - that kind of thing.
- I: Do you use any worksheets - supplementary worksheets like you made up or commercial?
- T: No I really haven't - occasionally I'll put something on the board like from the magic peanuts. I'll do some problems with negative numbers. But sometimes I'll put 10 problems on the board just for them to do. That kind of thing. On occasion I've put some addition problems just to see how they go about it. Most of them now don't use the Computer. Every once in a while somebody will say "Can I use the Computer?" and I'll say fine - they can. But most of them by now don't really go to it any more.
- I: What do you think of the Minicomputer?
- T: I really like it. I think it's very good. I really do.
- I: What about the slow children having trouble with it? Do you still think it's worthwhile for them too.
- T: Yes. Because they can at least add and subtract. They still have a little trouble with putting an X up and then they'll forget it's an X. That kind of thing. I think they can do things that they otherwise wouldn't be able to do.
- I: Have you had a problem with new students, students entering after the beginning of the year?

Interview 8 (continued)

T: I haven't had a lot of new students entering and two of the new ones came from _____ School. So they were having trouble. But not too bad. I usually put one of my top people to help them. And I have an eighth grader that comes twice a week for an hour and so I put her on. It's kind of funny because on the Computer I took one of my smart ones and said, "Now you show _____ and then _____ can show others." And it's really kind of fun to watch them try to teach her. It's kind of like - "Hey what are they doing?" So that's worked out real well. I haven't had anybody come in late. Now last year I did. And I felt like there was a problem but I think that was more on my part. I'm much more at ease with it.

I: What lesson are you on now?

T: We're on 260.

I: You're spending more time I think with teaching it than you did last year.

T: Yes. Right.

I: Are you making as good progress as you expected to make at the beginning of the year?

T: Oh yes.

I: Are students catching onto the idea of arrows? The use of arrow diagrams?

T: Yes. I think they get the idea. I guess the biggest thing that I see, and it's like with everything, they really don't have a lot of trouble with it when we're together but when they go to putting on their paper what they've got is right. It's just that it's not what I asked them to do. They'll change an arrow or not copy off the board right. So I usually give them credit because I mean they're doing the problem right, it's just they didn't copy it from the board right. But I think they get pretty much. And there is that little slow group. I think they probably will always have trouble. And they have a lot of trouble with some of the things especially when they go to their own. But I think it's because they are pretty dependent on somebody to always be there to reinforce the right answer and when that doesn't happen --. But I very seldom use the actual materials that I've been given when I'm not there to walk around. Now as I said sometimes I'll put 10 problems on the board and that's during reading and I won't help. If they come up I'll say well I'll have to help you later on because we're reading. But usually I am there to help because I usually just block out that time.

T: What kinds of things do students particularly like about the program?

T: They like all the probability games. They like the idea that we have the games. Most of them like the Computer. When we do the multiplying I think they are kind of impressed with what they can do. I really do. My better students really like the workbooks. They're very aware that they are at the top and there are others in back of them. I'm sure that's part of their motivation. But they really like the program. I really feel like they like most things. I'm trying to think of something that we do that they really don't like.

I: I was just going to ask what are the worst aspects from either the kids' point of view or your point of view.

Interview 8 (continued)

T: I guess from my point of view the grading would be more than in a normal program because they are doing different things at different times. The workbooks, that is difficult, although it's much more pro than negative. Let's see I really didn't have trouble with the materials. I guess I'd still like to see a way to meet that little low group. I don't know if that means maybe slowing down. I feel like there is a certain group of kids that take three years instead of two to go through or four instead of three to go through primary. Maybe if we could do that and then gauge CEMREL to them. I guess that's really my only real concern. I do know that there are some kids that still seem to me way out in left field. And as I said, when we do it together at the board they can usually participate and they seem to enjoy it. I really like it. I don't see them turned off at all. That's what I guess I like best. That they seem to like math.

I: Is there anything that you want to add?

T: No. Just that I really like it and I want to keep having CEMREL. I'm really pushing it. I understand they are going to have it in third grade next year. So I'm all ready. A really like it a lot. I'll be interested to see second grade if I do teach it there.

Interview 9

(Comment: This teacher teaches CSMP math to three first grade classes and also taught three classes last year. Shorthand notes were taken of the interview which was conducted by telephone; thus the responses given below are not necessarily in the exact words in which they were given.)

I: How many students are in your class?

T: 30-35 in the high and average groups and from 18-22 in the low group. It varied because students were moved between groups during the course of the year. Students are grouped according to reading ability and this grouping is usually appropriate for math as well.

I: Do you teach math once a day or twice a day?

T: Once for about 40 minutes on the average.

I: How does this time compare to what you would have taught before you taught CSMP?

T: I don't remember too well but I think it's about the same.

I: Has the second grade teacher said anything to you about your students from last year?

T: They say the students are very well prepared for second grade and they do better work than second graders usually do.

I: How did this year go for you and your class compared to last year?

T: The program went smoother this year and the kids had CSMP in kindergarten last year. But we had too many students and not enough teachers and the low ability group was much slower than last year.

I: Did you get further in the sequence this year?

T: I got farther with the high and average groups. With the high group we got to lesson 254 and with the average group, by pushing pretty hard at the end of the year, we got to 240. With the slow group at about the middle of the year we started over again at lesson 1 because they were so slow and didn't get it. Next year we are having a special pre-school grade for some of these students and four of them will be retained in first grade.

I: Is that true in other subject areas for this group?

T: Yes.

I: Did you omit any lessons this year?

T: Yes, I omitted the ones suggested in order to reach lesson 240 with the average group.

I: Did you use any supplementary materials such as worksheets?

Interview 9 (continued)

- T: No, except I used some kindergarten worksheets at the beginning of the year - like numeral writing. Sometimes I ran off extra copies of the CEMREL (first grade) worksheets.
- I: Did you use the workbooks more for checking this year?
- T: Less because I only checked pages 4 and 7 rather than every page the way I did last year.
- I: Do you think there's a need for testing materials for teacher evaluation?
- T: No, I think I can tell pretty well how the kids are doing from the lessons and the workbooks.
- I: Was your preparation time reduced this year?
- T: Yes a lot.
- I: How about compared with your previous math textbook.
- T: Well it's the usual thing - the first year takes a lot more time but now it's about the same as usual.
- I: Did you manage the materials any differently?
- T: Yes, I was better organized. I had an extra file to keep things in.
- I: Did you find that your students who had CSMP last year in kindergarten were in any way better prepared for this year?
- T: Oh yes - they didn't need as much explanation for many of the topics.
- I: How did you handle the problem of new students entering midway through the year?
- T: Many of the students who arrive at the middle of the year have done a lot of transferring and are slower students. I tried to spend time individually with them after school or at recess or in class when I could. I have them sit at the front so I can watch how well they do.
- I: Do you have them work with other students at all?
- T: Yes, but this way didn't work out as well as last year.
- I: How did you handle the slower students?
- T: Very often I had to do things with them rather than let them do it. They don't work very well on their own.
- I: Were you satisfied with their progress compared to what they would have accomplished in a regular program?

Interview 9 (continued)

T: Well they wouldn't have succeeded in any program. It's such a slow group. Our average class contains some students that we would normally think of as in the slow group.

I: Do you think this program adequately meets their needs?

T: I worry about these slow students but all in all I think they're getting more than they would have in a normal program. The faster students definitely do - they really do well.

I: Could you describe for me the progress your kids have made on the Minicomputer this year?

T: With the slower group, even at the middle of the year, it was like something completely new. Some can't place 6 or 7 or 9 on the Minicomputer. The faster students love it and can really do it.

I: Do you like using the Minicomputer in teaching math?

T: Oh yes.

I: What were your students' attitudes toward CSMP?

T: I think they like it. They don't get bored the way they did in the old program when they'd spend 2 weeks on the same thing.

I: What do you think of the spiral approach now?

T: Oh I like it now.

I: Did you find it frustrating the first year?

T: I sure did but by about the middle of the year I found things were working out O.K.

I: What's your overall evaluation of CSMP now that you've taught it for two years?

T: I like it. The students do well and I'm quite pleased. I find there is one big problem though. The materials aren't packaged very well. I have two years' worth of extra R 1's and 2's and you have to order the whole set even though you only use the middle ones most of the time. Also I have a lot of unused worksheets, especially those after lesson 250, just piling up.

Interview 10

I: How many do you have in your class this year?

T: Twenty-four.

I: Do you teach math once a day or twice a day?

T: Once a day.

I: How long is that?

T: This is a rather long period we have now. It runs about 60 minutes but it's broken in the middle with music and PE. So we usually can teach one lesson and then break for music and PE and then come back.

I: How does that compare with the amount of time you would normally spend?

T: About the same because all of the classes in the primary are all basically on the same schedule and since we have to change classes every class gets almost the same amount of time for it.

I: Have you gotten any feedback from the second grade teachers from students from last year?

T: I think they were - the feedback is kind of sketchy because _____ did not teach it last year and of course went to your program and had some questions and she would run in and say "Hey I don't understand." or "Would you help me with this?", "Can we borrow this?", and so forth. But apparently there haven't been any great problems without consulting the manual and so forth. Possibly _____ had a couple more because she did not have her week of training. She came in after the first nine weeks.

I: How did this year go for you and your class compared to last year?

T: Much, much easier.

I: Tell me about the difference now since you were the only two teachers we had who team taught last year - how was that different from ordinary teaching - what ways - anything other than the obvious ones?

T: Basically last year we had to teach to the middle of the group (teacher helped team-taught two combined classes last year). And those quick ones we had to kind of stifle them and the slower ones we had to help them along and when one of us would be teaching the other would be filling in. And this year it's much more precise in the fact that you've got all of an ability group together, and the fact that even though it's average and high you can speed things up, go a little bit faster. You don't have the obvious problems with the slow ones that "I don't understand." or "Can you say that again?" I didn't run into the difficulties this year as I did last year in the fact that last year we had such a wide range of ability grouping. And then of course it seemed like there was a large group of slow ones that seemed to pull us down every time we tried to do something. And this year with my average and above I've been very pleased with the lack of repetition that I had to do about a lesson or I would explain it - do a diagram on the board and say here are your worksheets, go ahead.

Interview 10 (continued)

T: And very, very seldom did I have to say - let's stop on this one and do number 3 together because everybody's having a problem with it. I think it was maybe 3 times in all of the worksheets that we ran into a problem. All of them have come to a grinding stop and then of course that's obvious that you would do that.

I: Is this due to the fact that you are also familiar with the materials?

T: It helps a great deal.

I: Is your preparation time down?

T: My preparation time is down. I'm familiar with the materials. I've had all the lessons previously. Now it takes a quick review rather than sitting down and reading thoroughly all of the things. And if you've got an example I know what to do and even though I followed the directions I had my own way of presenting it. And it's not like I have to read the directions and then decide how I'm going to do it. I read the directions and know exactly what's going to happen. The theory is that they had trouble last time so I'll bring those up instead of maybe the example that you're giving for that day. So, O.K. I know you know how to do an easy one like this - and then I'll go through it - but last time we had a particularly difficult time or some of you were very careless about - so. And this is when they first introduced the backwards play, you know. What are we going to do in a situation like this. Now this stumped you last time. In that way there's a couple of them that automatically say "Oh well this calls for a" - and I'll say "Yes, now remember how we did that." - and then everybody goes through it and so it works out. It seems that it goes much, much better for me and I can use a combination of things and I don't have such a large grouping. It's a little bit more intimate with a smaller group. I have a more relaxed relationship and not so much discipline because - "Hey are you listening?" - you know if you've got 50 it's - "Are you listening?" and "You stop that." and all of this. In this way I can focus my attention and get everything on the board so they can all see it and they all have desks, where last year sometimes they did and sometimes they didn't.

I: Did you skip any lessons this year?

T: I skipped two and then I waited until I got 2 of them together and I spent an entire hour doing it. And it was like one was one week, one was the next week. So I just skipped the first one and waited for the second week and expanded the program that way.

I: Do you use any supplementary materials? Like worksheets or anything?

T: No.

I: Did you use the workbooks in any different way this year?

T: Not really. The children were very, very enthused about the workbooks, and seemed to be more excited about them this year than last for some reason. And I was very pleased because sometimes they would ask - "When are we going to have our workbooks again?" - and I'd say "In five more lessons." or "Starting next Tuesday." or something and they could hardly wait. And I didn't have the laborious process because last year we were grading 50 at a time and this time it was much easier to take a child and eliminate maybe the first

Interview 10 (continued)

two and then let them go on and work. But they've done remarkably well. I've been very pleased with them.

I: How far do you expect to get this year?

T: We are on 260's now so I'm sure that we will be fairly close to the end of the program.

I: Do you think there is a need for special materials for student evaluation or do you think the workbooks do that?

T: Workbooks do an adequate job. Also their daily worksheets give an indication. I don't see any need for "special tests" unless it's simply devised to say "mid-year test" just to see a basic consensus but I think with your daily worksheets and that type of thing you can generally tell really easily who is and isn't having the problems and in what areas.

I: Did you manage the materials at all differently?

T: Yes. Last year they came in batches at a time. This year we had the entire thing. We got a file cabinet - filed it all according to number of worksheets and then when we came to that lesson it was on the file cabinet and it was all recorded in numbers. You just reached in, grabbed them and that was it. So it was much easier handling - the organization of the materials was already done this year because we had all of them before school started and I came out a couple of days before school and they were all organized and ready to go.

I: Is that a problem with this program do you think - the mass of materials or is this only a beginning problem?

T: Possibly storage problem in the fact that if you are working from your traditional workbook it's all there and it's concise. And this way there are materials here, there are the big Minicomputers and it's a particular disadvantage in the fact that we move from room to room every nine weeks. So they all have to be shifted and then you see I don't feel that I want to leave it in another room to come and get it three weeks later because there might be something missing or I can't find what I need because they've rearranged the room and they've stuck it in a closet. So that particular thing is causing - not causing a problem because we've overcome that quite easily but it does cause some hassle to be sure that all of our stuff - they have given me a little corner of the storeroom so when we go on cycle we run to the storeroom and stick it there.

I: How did you handle the problem of students who entered halfway through the year?

T: Relatively easily. Last year we took it upon ourselves to try to pull those to the side and every time that I would teach, _____ would take the child individually and work with them and try to explain the steps as we went through. This year if I assign a worksheet to the entire class, after an explanation I'll go and sit beside that one or if I have a very fast student I'll say do tell them the answer but if they get stuck help them with the process, and this is especially true with the Minicomputer.

I: Does that seem to work - the peer tutoring?

Interview 10 (continued)

T: Yes it did because I picked of course some of the better students and they seemed to have a very good vocabulary and a very good explanation of it and it was very easy for them. And they'd say "I'm stuck I don't understand how to tell him how to do this." It seems like the children are very open and they know when they are going to have a question or a problem and they are very relaxed in the fact that they don't understand how to tell him to do this. And I say "O.K. why don't you go do something else and I'll sit with him a minute." That will alleviate some of that. But I always put them close enough so that I can hear what they are saying and how they are explaining. And it was very interesting. Sometimes they did a much better job with fewer words and were much more precise than I could have been because I have a tendency to be a little bit wordy at times.

I: You didn't have very many low ability kids in your class did you?

T: No. One or two that didn't catch on as quickly as others, but you always have those no matter what grouping.

I: Did you work at all - how did you work with the kids who were slower?

T: What I would do is I would start them on a worksheet and say "I'm having a group - if you have a question come over and ask me while everybody else is working." Then what I would do is spend those 10-15 minutes with those children. If they come up and say "I get number 1 and number 2 but number 3 is really flooring me.", then I say "How many of you are having trouble with number 3." Well then they would go back and work and then when they would come to another one they would come back and join the group.

I: What kind of progress have the kids made in the Minicomputer? What kinds of things can they do?

T: I'm really amazed. I have a sixth grade helper that comes down from upstairs to help me. I'm really pleased with their thinking and how involved it gets and how well they can work the minicomputer to decide how to do many of the things. Now of course _____ being a sixth grader can do it the traditional way but he is amazed that I give him a problem that kind of stumps him but he can work through it and my children go right up and start with the Minicomputer. I had one little girl who was here at the first part of the year but came in later and she took it home and we were doing fine and mother understood it until we got to one-half times and it really stumped both mother and dad. She says, "My Daddy knows everything about the Minicomputer but he can't do that." And so mother came up because the little girl was having trouble with it and they couldn't figure out what we were doing and it took an explanation. Then she was very happy and she went home.

I: How about arrow diagrams - did they like doing those?

T: Loved them. They seem to do very well with arrow diagrams.

I: What kinds of things do they like about the program and dislike about it?

Interview 10 (continued)

- T: Right now there are some of them that have outgrown the Minicomputer. They have decided that they know what they are doing. And it bothers them that I say "Today we are going to need our Minicomputers." "Do we have to use them?" and I say, "No you don't have to use them until you make a mistake. And then when you are doing your paper and you make a mistake, to correct your mistakes you've got to use the Minicomputer." And then some of them who are doing one-half times of course with an easy number like 486 - many of them already know mentally how to do that. So I don't force them to do it. But I have the stipulation that you go ahead until you make a mistake then that shows that you are having some trouble and I want to help you out. I was trying to think of something that they really dislike and I really can't think of anything that the whole mass of them has a general dislike for - you know one or two don't like to do this or don't like to do that. And it might be just because it's a little more difficult for them.
- I: What about the spiral approach? Do you find that's working?
- T: Very well.
- I: Did you find that frustrating at all the first year?
- T: I think it was frustrating in the fact that I didn't know when the spiral would come around again and how deeply I needed to get and how comprehensive my teaching needed to be and how much - when do you stop and say, "We'll come back" - or what my expectations should be. But this year, especially with this class, I haven't found that to be a problem of how well they have to have the skill before I go on because most of them get it fairly well and fairly easily. It's kind of arbitrary; the guidelines the teacher wants to set up.
- I: What's your overall evaluation of CSMP now that you have taught it for 2 years? What are the best things about it and the worst things about it?
- T: Probably one of the disadvantages we have found is parental concern. They don't seem to understand that a new program is valid just because it's not printed up in a book - they think those workbooks are sacred and we've had some concern of the parents - they're worried that their children aren't getting "traditional math" and even though we do our very best to explain it, there has been a great deal of concern about - "Well they don't have a math book that they are working out of."
- I: So it's the format more than the idea of the Minicomputer?
- T: I think so - I think it's the thing that they don't have a "math book." CSMP comes in a sequence and also if you get worksheets and then you get a workbook that they bring home and then they bring something on a page they have drawn - it doesn't look as organized I guess as a page that they just fill in the numbers or do. And I'm really concerned that some of them have taken that idea. Of course it's very hard to break away from the traditional program. And also some of them don't understand the Minicomputer and why it needs to be taught. And the kids seem to like it though. And my group particularly seems to be learning.

Interview 10 (continued)

I: Any other things about the program? Do you like it?

T: Very much. I had a graduate class in New Trends in Mathematics and I was always bringing up that I was doing the CEMREL program and we did thus and so. And we did the Minicomputer and the instructor asked me if I would bring some of the materials in and just to show it to the class - what we did and how it was introduced and this type of thing. And I did and he was very impressed. He even asked me if I would schedule a meeting to come to the district teachers' meeting for North Central Missouri to give a talk about how my particular classroom and how it was working.

I: Do you have anything you want to add that we haven't gotten around to yet?

T: Not that I can think of. It's just that I personally have been very, very pleased. Last year I think I was concerned and a little bit more nervous about the program and each day's lesson was new and I didn't know what followed it and this type of thing. But personally it's gone much more easily this year. Probably for the combination of things that I'm familiar with the program and second I have a high ability group. And I think that's really helped me this year. And the fact that I feel that the children have progressed more this year than last year through those particular causes I guess.

Interview 11

I: How many students are in your class?

T: Twenty-two.

I: Do you teach it once a day or twice a day?

T: Once a day.

I: About how many minutes altogether?

T: About an hour to an hour and fifteen minutes. It depends on our schedule. It's anywhere from a minimum of an hour to sometimes an hour and a half.

I: Is that more than you would normally spend on math?

T: Yes.

I: Did you get any feedback on last year's first graders from second grade teachers?

T: No. Of course we had changes of teachers and all kinds of things.

I: How did this year go for you and your class compared to last year? Now I understand that you team taught last year but did you notice any other differences?

T: It went much smoother. Because of course we'd been through it once before.

I: Now you have the slow group; how far did you get in the sequence this year?

T: Well we followed the daily set of lessons almost to the letter. So that they had been through it and they have been exposed to it. They are not as competent in a lot of the skills but they have been exposed to them and they can do them. A great deal of them of course now are teacher guided. We work on everything together.

I: How far are you on the sequence now? How far do you think you will get by the end of the year?

T: I'm on 275 or something like that. But as I said I followed it just day by day.

I: Did you omit any lessons? Repeat any lessons or make any alterations like that?

T: Since our math period is so very long many times we would do the workbooks together. But I think the children got into some - for instance we've done all the A workbooks also. And I think a lot of these children would not have even done the A workbooks. The best children do them on their own. And then I worked through them orally working together - through some of the workbooks that are farther advanced than their skill level.

I: Would you say the general ability level of these first graders is about the same as last year's or a little better?

T: Probably a little better.

Interview 11 (continued)

- I: Did you use any supplementary materials, like commercial worksheets or anything like that to supplement the program?
- T: Not to supplement the program per se. I did some "time" things and some things that are not covered in the program.
- I: What were those things?
- T: Time; we did some measurement with inches and feet - which is not covered by the program - which was a skill they needed to do some other things and that they need for next year. I extended the basic fact drill and we would every once in a while just do a worksheet just to see how many more facts they could do.
- I: Was your preparation time significantly reduced this year?
- T: Oh, yes.
- I: Was it reduced to about the level that would ordinarily have been in a math program or was it still a little higher?
- T: No I think it was about the same.
- I: Do you think there is a need in the program for built-in testing materials for student evaluation or do you find the workbooks are adequate?
- T: Sometimes I think it would help and sometimes I don't. That's a hard question to answer. I think that sometimes it would be nice to know just what they do know over and above what the workbook has.
- I: Sort of a mid-year kind of test - that kind of thing?
- T: Yes. Or not so much a formalized test but just -
- I: A special workbook after 100 lessons or something like that?
- T: Yes that has everything so you can see where they are.
- I: Did you manage the materials any differently this year than last year?
- T: Not really.
- I: Is that a problem with this program - the mass of materials?
- T: Only when you have to pack them every night.
- I: Did you have many students who came after January first?
- T: _____ came in just a couple of weeks ago. _____, although she was in this school she switched cycles which placed her in our class but that was our second or third quarter. So she has been in the room since Christmas.
- I: How did you handle the problem of kids coming to the program that did not have minicomputer background?

Usually just let them work with somebody else or I'd sit down with them.

Interview 11 (continued)

I: Did that work out very well?

T: Yes. My children are not very independent when it comes to just sitting all by themselves and working with the Minicomputer but if there are two of them they can catch their mistakes and they're not as likely to just add checkers or take checkers away for no reason.

I: How did you handle the slower kids?

T: I'd pair them within the group on a great deal of things. Which is what we did last year. But of course they're paired with children that are more just average. But they would be paired with those children and a lot of times they would work the sheets together.

I: Did you work with small groups of kids?

T: Yes. Here again I used that last thirty minutes or however long it took us because most of the lesson plans were only 40-45 minutes average time. So I'd use the time after we had accomplished that, either independently or we'd do workbooks together and here again that's where I'd get in a lot of their skills.

I: Were you satisfied with the progress of the slower kids in the program? Do you think it adequately meets their needs?

T: Yes I think they know just as much as they'd know in a regular program.

I: What about the progress of kids using the Minicomputer - how does that compare with last year with this ability group?

T: I don't think my children know the Minicomputer well at all if they have to sit all by themselves with no help whatsoever. They follow it when we do it at the board and they do it very well in groups but here again they catch each other's mistakes. My kids for some reason make a lot of just random errors. And if it's straight adding they'll be pretty good at that but any of the others - the backward plays or subtracting or negative numbers, they get all confused.

I: Do you like using the Minicomputer or do you think it causes more difficulties.

T: Yes. I think it teaches a lot of little things and I had a lot of fun doing it.

I: What is the kids' attitudes towards the program - what kinds of things do they like and dislike about it?

T: They don't like the Minicomputer. I don't know why. They just would rather not. And they like the games-the marble shakers and they like the guess-my-number and where they tell you the number and then you give them another number to figure out what you did. They like those kinds of things.

I: What about workbooks - do they like those?

T: Yes. Most of them. They really enjoy doing the workbooks. They don't like the worksheets if they involve the Minicomputers. They like the others.

I: What about arrow diagrams? Can they do those fairly well?

Interview 11 (continued)

- T: Yes they like those. They get confused a lot of times by them. You know they come up and ask - "Now which way do I go to follow the arrow?" But I think they understand it fairly well.
- I: Do you find the spiral approach is working?
- T: Yes.
- I: Was that frustrating at all last year - the first time through the material?
- T: Yes. Well this year I just went ahead whether they understood it or not. We just moved on because I knew we were going to come back to it.
- I: And you think it worked out fairly well?
- T: Yes I think so, especially with the low kids because after about 10-15 minutes their attention was on another topic anyway, especially if they didn't understand it.
- I: What is your overall evaluation of the program after teaching it for two years? What are the best things about it from your point of view and what are the worst things?
- T: Probably the hardest thing for me would be to determine just which workbook series to put them in. To determine just exactly what their ability level is in the program is probably the hardest and the thing that I don't know. I like the idea of the stories and the way most of the skills are taught because I really think they understand them. All I have to do usually is remind them that's an Eli story or Eli would do that. And then they associate a lot of things in their minds and can go back and it help them. That's probably one of the biggest things I like - the teaching techniques in it.
- I: Anything else you want to add?
- T: Nothing I can think of.

Interview 12

I: Do you teach math once a day or twice a day?

T: Twice a day usually.

I: About how many minutes altogether?

T: Around 30.

I: Is this about as much time as you would have spent ordinarily on another math program?

T: I think so.

I: Have you gotten any feedback from second grade teachers about any of your students from last year?

T: No. No they haven't said one way or the other.

I: How did this year go for you and your class compared to last year?

T: Not as well. My class is kind of game-oriented because I do a lot of learning games with them. And for some reason a lot of the CSMP materials seem like another game and to them. Anything classified as a game automatically becomes unimportant. They don't feel the importance of paying attention or learning the rules or whatever. And even though I stress that we'd be using the mini-computer all year and stress important concepts, about a third of the class at least just didn't seem to see the value in learning it.

I: But that wasn't the case last year then? And yet you used the games last year.

T: Maybe not as much. I have been using more this year than I did last year. I think it's part of the attitude that they have.

I: How do the students in your class compare in overall ability with the kids from last year?

T: Overall they are a bit lower. Although my higher students are higher, average to low are lower than they were last year. I'd say overall it was a lower ability class.

I: Did you omit any lessons this year?

T: Just a few at the end before they went on vacation.

I: How far do you think you will get?

T: Well we finished lesson 300 and something - I don't remember.

I: Three hundred eight is the total. Did you finish that?

T: No. We went to 302 or 303.

I: Did you use any supplementary material?

T: A lot.

Interview 12 (continued)

I: Commercially made or your own?

T: A few ditto masters commercially made - mostly my own. Again using a game-type situation to get practice on a lot of things.

I: What were the contents of these worksheets mostly?

T: Well I didn't use any worksheets. I worked on addition and subtraction practice, also money - we did a lot more with using money - and a little more on place value, measurement, number sequence, counting by 2's, 5s, 10s. That was basically a lot of extra work on addition and subtraction number sequences. That was the bulk of it.

I: Did you use the workbooks any differently this year than you did last year?

T: No.

I: Do you think there is a need for testing materials to be built in to the program for student evaluation or did you find the workbooks were adequate?

T: Well the workbooks could be used. However, if you use them as tests then you can't really use them as a learning factor. You know if you are using it as a learning factor and going around helping and as a test you give it to them and give the directions and go on. So it wouldn't hurt to have a test.

I: Did you have new students entering mid-way through the year?

T: Yes about five I believe. And most of those came right in the first quarter of the year.

I: Was that before Christmas?

T: Oh, yes. There were only 3 or 5 that came in what I would call the middle of the year.

I: How did you handle that problem of kids coming in mid-way through the year?

T: Usually what we would do is assign student tutors and I even used student tutors for the ones already in the class that were having trouble. And I promised the tutors a reward if their pupil reached a certain goal. Like on the minicomputer I promised them both a piece of candy if they learned the minicomputer basic numbers 1-10. And I also helped them - I didn't go back to the beginning workbooks. I didn't do that - I could have.

I: Did you find that that tutoring worked very well?

T: Yes it does. As long as the person they are tutoring doesn't just make a joke of it and think this is a fun time. But it usually works out real well because a lot of times they were working for a reward and they both worked pretty hard to get it.

I: How did you handle the slower students? Did you do any special things for them?

T: Well the slower students couldn't get past the second workbook of any of the series. When they completed the first two workbooks and the rest of the class

Interview 12 (continued)

was moving on a lot of times I just made up practice sheets for them to do.

I: Did you work with them as a group at all?

T: No I didn't take the slow kids together. I worked with them more individually.

I: Were you satisfied with the progress of the slower students - did they accomplish as much as they would have in a regular program?

T: No I don't. I think a lot of the CSMP - the way it's presented, the arrow diagrams and the different Minicomputer functions kind of threw them. I think they had problems catching on because some of the slower students had a hard time with abstractions. They need everything in concrete terms. And when it came to using arrows they just couldn't get it figured out.

I: Do you think they would have been better in a more traditional kind of program?

T: I think so.

I: Did you find your preparation time was reduced this year?

T: A little because I was more familiar with the program. Not a whole lot - not drastically.

I: What were your students' attitudes towards the program?

T: Until about the last third of the year I'd say the attitude was better than it would have been in a traditional math program. They looked forward to it. They didn't know what math was. I guess I didn't say, "Now this is our math time." They didn't know what math was. They seemed to enjoy it. But towards the end of the year we were having problems anyway with the materials. The Minicomputers and the checkers just either got used up or disappeared by the end and they came in it was making complications. And they seemed really tired of it. When I'd put an arrow diagram on the board they'd groan, "Oh, not this again." And when we'd get the Minicomputers out they wanted to do it but they didn't want to listen to how the functions work. They didn't want to listen to how you do the addition problems. They just wanted to get in there and do it. Which kind of made a problem.

I: What do you think of the spiral approach?

T: Well I think it's pretty effective. In some of the concepts where you are learning to use a Minicomputer and you are learning to use the arrow diagram I gave more practice on it than the material called for because I felt that if they didn't at least get a small handle on it at first then the next time it was presented it would be just adding confusion onto confusion.

I: Did you find the spiral approach a bit frustrating the first year or not?

T: No, not really.

I: What is your overall evaluation of CSMP now that you have taught it for two years? What are the best things about it and the worst things about it?

Interview 12 (continued)

T: The best thing about it is the high student interest level. It still is a lot higher than your traditional "Turn to page 36 and do these problems." And since I went back to the traditional math program I really get that a lot. They just don't want to do it. But on the other hand the bulk of the materials, having all these boxes of materials, especially for us that move from room to room, has been a problem and then not getting some of the materials. We never did get paper to use so we're having to use these little squares of writing paper to draw these big long diagrams and it was getting all fouled up. And the Minicomputers and checkers were gone the last two or three months of school. Also it didn't seem to me - I supplemented quite a bit, especially for addition and subtraction - it didn't seem to me that they got the skills that they should have in their basic addition and subtraction facts. I don't think they made the transfer from the arrow diagrams and the arrow snakes over to addition and subtraction. I think they looked at it as completely different.

I: What do you think of the Minicomputer?

T: Well I question the extreme amount of time spent on learning to use the Minicomputer when perhaps they should be doing more traditional drill-type activities. If I hadn't done any supplementary work, then when they went into the traditional math program next year could they make the change? Because using the Minicomputer may have given them an understanding of how the process works - you know how addition works and all that but I don't think it really prepared them for actually doing a paper and pencil activity and using their heads. In fact one of my faster students who is already doing second grade math took a paper home one night that hadn't gotten finished and he could do two digit addition problems - he could do them in his head but he told his mother I can't use my head I have to use the Minicomputer. I just wondered how they made the switch. If in second grade they are given a two digit problem and if they just see in their mind - Oh, I know that $5+3$ is 8 I don't have to work that out on my Minicomputer.

I: Anything else that you want to add? Did you like using the program?

T: Yes. It's an enjoyable program. A lot more so than a traditional program. But it gets very frustrating when, especially for the lower kids, you know they are so lost and you don't quite know how to explain it to them so that they can really grasp it. They're so dependent. They need somebody to lead them along step by step. That's hard and also I can't really in my own mind justify the amount of time given to the minicomputer for the benefit the students get out of it. I can't justify the amount of time that's put in to learning how to use it.

Interview 13

I: How many students are in your class?

T: Twenty-three.

I: And do you teach math once a day or twice a day?

T: Usually twice. I try to get it in twice a day.

I: And about how many minutes altogether?

T: Forty-five.

I: Is that about what you would have spent teaching math another year - non-CSMP?

T: It depends on the groups. The program I had my first year was Silver Burdett and I had the math groups whereas with this math I teach the whole class at once. See if you had math groups then you might spend more time.

I: Did you get any feedback on your second grade students - the kids you had in first grade that are now in second grade?

T: Well, yes. _____ said that they were doing very well. A lot of them got tired of using their Minicomputer which is understandable. She's getting pretty far into the lessons now where it's getting difficult for some of them as far as number facts and things. In fact I think they scored very well on the standardized test, the math part. More than I guess problem section and reading problems. She said they didn't have enough practice in that, in word problems.

I: How did this year go for you and your class compared to last year?

T: I think I'm going to end up about the same. I may have gotten a little farther last year but my schedule was different. Special classes like PE and Art came at a time when math is in the morning. So I'll squeeze a small lesson - a short lesson in in the morning. Last year I got two easily in a day. But in regard to the classes I have more slow kids this year a few slower ones. Last year I had a good group.

I: Would you say the general ability is a little lower this year than last?

T: Well I had some really bright kids too. I'd say they were on the same level as last years. There were just not as many slower ones. I think last year's group enjoyed the Minicomputer more. It seemed to me they did. I don't know whether my newness at it or excitement was different about it.

I: Was that possibly because you had more slower kids or was it more wide spread than that?

T: They like the number line. A lot of them just got used to using the number line. A lot of them will go by tens and then by the ones. You know that sort of thing. They are not used to doing that. I had one girl that's very good at that. In fact she'll add large numbers in her head saying, "Well that's 2 tens." and then she'll take the ones and add them separately. That was just today I got a question - the class got really hung up on. I had three Minicomputers out there on the hundreds board and I said, "What if we take that hundreds board and put it over where the one is - what if we switch them around?" I said it would make

Interview 13 (continued)

no difference - they're all the same, except the place - the position you put them in is what's important. They sort of got hung up on that. But that's the first time that came up seriously like that. They had asked about it before and I just mentioned it. But today they got really hung up on that.

I: Do you like using the Minicomputer?

T: Yes. I do.

I: Do you think the slow kids get something out of it too?

T: Well they like it and I always had them do the real simple parts of it. Otherwise they get too frustrated. And there's one boy that can't remember yet what values the different squares have. But he tries. You know they want to do it. They like to do it.

I: How do you handle the problem of new students coming in mid-year?

T: With _____ who may have come in before Christmas because I didn't have too big a problem. She had a problem with the Minicomputer at first. But then the better students helped her with that and did it with her.

I: Do you find that peer tutoring works?

T: Yes. I think so. I still have them do that - have them work together on a problem and they'll pick up something, especially on the workbooks, when they do the workbook pages because I don't have enough time to answer all the questions or do all the problems with them. But it seems to help them.

I: Do you use the workbooks any differently this year than you did last year?

T: I think I use them more. I think I do.

I: Do you think there is a need in the materials for testing materials for student evaluation?

T: That might be good. I think so.

I: And what sort of intervals would you put them at?

T: After the different concepts like maybe the idea of halves and thirds, that type of thing, subtraction, and taking one-half on the Minicomputer.

I: Sort of like by topic rather than by time.

T: I think so. Because they get confused. Today I noticed I did the lesson on one-half of a big number on the Minicomputer by pairing Venn Diagrams and they get confused. You make a backward play for this thing, then you make another backward play for this one-half or you subtract and they get sort of confused as to when you do what. Some of them - not all of them.

I: Did you skip any lessons this year?

T: If I skipped them I went back. Sometimes it was for time reasons I'd take a short lesson - it wasn't out of sequence. It wasn't that type of thing.

Interview 13 (continued)

I: Did you use any supplementary materials, worksheets or anything like that?

T: Number facts worksheets. Number facts 1 to 12 maybe. They are doing a lot of these.

I: Were they some that you had around or were they commercial ones?

T: Scott-Forsman. And the reason - do you want me to give you the reason for that? We are going to that program next year - you probably know. And so I thought that if that program expected them to know their number facts fairly well and quickly then I would give them that kind of practice.

I: What do you think of that decision?

T: Well I'm disappointed that they didn't continue the program in third grade. It seems it was a money decision partly I guess. And I don't know if the results from your tests last year, they weren't phenomenal with great big differences, but I think that most kids get into a higher level of math than it's going to show. And I was sort of disappointed.

I: Did you find your preparation time reduced this year over last year?

T: Yes. You know if you read over the lesson once it came back to you. Last year I had to sort of figure it out.

I: Was it about as much as you would have spent in another program or still a little bit more?

T: I think it was about the same. In some of the other programs you have to find your own materials and gather up this type of thing which takes time.

I: Did you manage the materials any differently this year than you did last year?

T: I gave more out to the students this year. I think last year I would keep the flash cards and say, "Well when you want to use them." But this year they used the materials fairly frequently. Cuisenaire rods they loved.

I: What things do they like and dislike?

T: They love the cuisenaire rods and several really like the Minicomputer, and the dot-to-dot cards they like, the flash cards, they like any kind of flash cards. They really enjoy the game "guess it." They like playing that.

I: Guess my rule?

T: No not that one. The one with - the racing game, probability.

I: Evidently they didn't like the Minicomputer quite as much though.

T: I don't think they did. They love the arrow drawings. I would tack those up on the walls for weeks.

I: Do they do those fairly well now?

T: Yes. Not the slower ones - it's too much of an abstraction for them. But the other ones. They do have trouble - I have to be honest about this - when

Interview 13 (continued)

you give them 4 arrows, let's say within a snake kind of thing and they have to find the different values. That's their own fault - they just don't take enough time to do it. They can do it. Maybe overwhelming I suppose.

I: What are their attitudes toward CSMP overall? Do you notice any difference there? Do they like it more or less than another program?

T: I don't know. They've never had another math program. So I can't really say.

I: But haven't you taught other programs? From your point of view do you notice any difference?

T: I think they're more excited about this one. I didn't particularly enjoy the program we had. But they enjoy I think the difference in lessons. You know they are on subtraction for a week at a time - you can catch them off guard. Some lessons they groan, "I don't want to do this."

I: Do you find that the spiral approach works? Did you find it frustrating a bit last year the first time?

T: Yes - I guess. I had my doubts last year because they didn't get this at all - "What should I do?" And you'd maybe emphasize it. So I just sort of let it go this year. It seems to have worked. I think most of my students have a good understanding of math.

I: How do you handle the slower students?

T: Myself - usually the teacher.

I: Do you regroup them at all into small groups or anything like that?

T: Well I have three - just three that will do their workbooks together. Now when we do the lessons - they can do them at the board. I know probably they don't understand all of it. But I let them go through it just for number practice and the arrow, the minicomputer. The real simple moves on the Minicomputer they can do. But when we do workbooks -

I: They don't work well independently then?

T: No.

I: Are you satisfied with the progress that the slower children make in this program?

T: I had to implement things into it. I think the worst aspect is that there is not enough practice at the beginning of the year for children to associate numerals and numbers with concrete objects - to know that "6" is related to a pile of 6 blocks.

I: Now that you've been in the program two years, what is your overall evaluation of it? What are its best and worst aspects?

T: I think I'm more comfortable with CSMP than I would be with a traditional one because I've taught CSMP for two years and a traditional program only one year. I like the way CSMP teaches kids to think about the kind of problem they're doing. I think it gives them a better understanding of place value

Interview 13 (continued)

and I like the manipulatives and the way they keep the kids' attention. I also like the little number stories, like Eli, which really gets the kids' interest. I don't think some of the lessons adequately prepare the students to do the worksheets which follow - but that's not so bad. I think that the minicomputer and arrow diagrams might be too abstract for the slower students. I'm not quite sold on it for slow students.